

DEPARTMENT OF ENGINEERING MANAGEMENT
The George Washington University
EMSE 6230: Hazardous Waste Management
Course Syllabus

Room 207, Funger Hall, 801 22nd Street, N.W.
Course Web Page: <http://blackboard.gwu.edu>
E&EM Web Page: <https://eem.seas.gwu.edu>
E&EM Newsletter: <https://eem.seas.gwu.edu/newsletter>
E&EM Institute: <https://eemi.seas.gwu.edu>
Deason Web Page: <http://www.seas.gwu.edu/~jdeason>

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Course Description

At the end of this course, students will have a working knowledge of the hazardous waste management and cleanup processes used in the United States and around the world. The course includes coverage of the roles of the relevant federal, state and local government agencies and major hazardous waste laws and regulations, including the National Contingency Plan. In addition, the planning, assessment, investigation, design and construction phases of contaminated site remediation projects are studied. Special attention is focused on the chemical, physical, biological and thermal treatment processes currently available for such remediation projects. Also included are the important topics of quantitative risk assessment, waste minimization, resource recovery, hazardous waste transportation and facility siting. (Three credit hours, 2.5 hours/session, one lecture session/week, 15 weeks; elective course in the Environmental and Energy Management concentration.)

Grading

Case studies	10%
Mid-term exam	30%
Course project	25%
Final exam	30%
Class participation	5%

Textbook

LaGrega, Michael D. Hazardous Waste Management. New York: McGraw-Hill Publishing Company. ISBN-13: 978-1577666936

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SCHEDULE AND ASSIGNMENTS

<u>Session</u>	<u>Topics</u>	<u>Assignments</u>
1 Jan 13	<u>Introduction to Hazardous Waste Management and Cleanup.</u> Definition of Hazardous Waste; Overview of the Problem; Future Outlook	Read: Chapter 1
Jan 20	Martin Luther King Day (no classes)	
2 & 3 Jan 27 Feb 3	<u>Major Hazardous Waste Laws and Regulations.</u> Legislative and Regulatory Processes Used to Develop Environmental Requirements; Overview of CERCLA (Superfund), RCRA and Other Major Hazardous Waste Laws	Read: Chapter 2 Turn in: Project Proposals (January 27)
4 Feb 10	<u>Waste Characterization.</u> Hazardous Waste Characterization and Definable Properties	Skim: Chapters 3 & 4 Read: Chapter 5
Feb 17	President's Day (no classes)	
5 Feb 24	<u>Environmental Audits, Pollution Prevention and Waste Minimization.</u> Executive Order 12088 and the Federal Recycling and Affirmative Procurement Council; Approaches to Hazardous Waste Reduction; Production Process Tracking Systems	Read: Chapters 6 & 7
6 Mar 2	<u>Hazardous Waste Generation, Transportation and Disposal and Emergency Response.</u> Generators and Transporter Responsibilities; Treatment, Storage and Disposal Facilities; National Response Team and Regional Response Teams; National Contingency Plan and Regional Contingency Plans; National Response Center; State, Local and Industry Response Systems	Read: Chapter 8
7 Mar 9	<u>Presentations and Review.</u> Project Progress Report Presentations; Review for Mid-term Examination	

Mar 16	<u>Spring Break</u> (no class)	
8 Mar 23	<u>Mid-Term Examination</u>	
9 Mar 30	<u>Hazardous Waste Treatment Processes</u> . Overview of Physical, Chemical, Biological and Thermal Treatment Processes	Read: Chapters 9 - 12
10 Apr 6	<u>Land Disposal of Hazardous Wastes</u> . Declining Landfill Capacities and Increasing Demands; Landfill Solutions; Underground Injection Wells; Other Types of Disposal Facilities	Read: Chapter 13
11 Apr 13	<u>Site Remediation I</u> . Overview of CERCLA Remedial Action Process and RCRA Correction Action Program; Preliminary Assessments and Site Inspections; Hazard Ranking System; National Priorities List; State Priorities List; Remedial Investigations and Feasibility Studies; Records of Decision and the Administrative Process; Remedial Design; Remedial Action; NPL Deletion Process	Read: Chapter 14 & 15
12 Apr 20	<u>Site Remediation II</u> . Superfund case study: Urban River Restoration Program	Read: Chapter 16 & 17
13 Apr 27	<u>Natural Resource Damage Assessment and Restoration</u> . Natural Resource Damage Assessment Laws and Regulations; Federal and State Trustee Agencies; Damage Assessment and Restoration Procedures; Groundwater Hydrology and Contamination Processes; Groundwater Contamination Detection, Analysis and Monitoring	
14 April 29 Wednesday	<u>Presentations and Review</u> . Final Report Presentations; Review for Final Examination	Turn in: Project Final Reports
15 May 4	<u>Final Examination</u>	

Class Logistics

A notification roster will appear on the class web site and will be used to alert each class member if the class is cancelled due to inclement weather or other reasons. If you are uncertain about class cancellation at any time, please call me.

If I fail to arrive for the class at the designated starting time and have not notified the class of a late starting time or cancellation, students should wait in the classroom for at least 30 minutes before departing. One member of the class should be selected to notify the EMSE Department of the Instructor's absence by calling the EMSE Department at 202-994-1892 on the next business day.

All students should familiarize themselves with the emergency evacuation routes from our classroom. Pay particular attention to understanding how evacuate if power is out and there is no light.

In the event of an emergency evacuation of the class building, students are to assemble at the southeast corner of 21st and G Streets, N.W. (primary location) and not depart until I have accounted for everyone.

GW Campus Advisories and Alerts

Students should check the GW Campus Advisories web site at:

<http://www.campusadvisories.gwu.edu/index.cfm> for current information related to campus conditions, closures, safety information and any other information concerning events that may disrupt normal operations. All students, faculty and staff registered in the GW Banner system will receive emergency alerts, notifications and updates sent to their GW email address. If individuals elect to receive these alerts on a mobile device, they may log on to GWeb Information Web Site at <https://banweb.gwu.edu> and update their contact information to include mobile devices.

Academic Integrity

Academic integrity is central to the learning and teaching process. Students are expected to conduct themselves in a manner that will contribute to the maintenance of academic integrity by making all reasonable efforts to prevent the occurrence of academic dishonesty. Academic dishonesty includes, but is not limited to, obtaining or giving aid on an examination, having unauthorized prior knowledge of an examination, doing work for another student, and plagiarism of all types. Ignorance is no excuse.

University Policy on Religious Holidays

In accordance with University Policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. Faculty should extend to these students the courtesy of absence without penalty on For more details and policy accommodations for religious holidays please see: <https://students.gwu.edu/accommodations-religious-holidays> .

Support for Students Outside the Classroom: Disability Support Services (DSS)

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: <https://disabilitysupport.gwu.edu/> disabilitysupport.gwu.edu/

Mental Health Services

The University's Mental Health Services offers assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations, confidential assessments, counseling services (individual and small group), and referrals. Colonial Health Services: 202-994-5300, <https://healthcenter.gwu.edu/mental-health> counselingcenter.gwu.edu.