Course Description
Examines the technical and regulatory complexities of municipal, hazardous, and industrial waste management. Includes special emphasis on basic environmental science and related technical fields.

Course Textbook

Course Learning Outcomes
Upon completion of this course, students should be able to:

1. Summarize the history of waste management including impacts from early human civilization to current day.
2. Describe the major categories of waste.
3. Assess the major regulatory developments surrounding waste management.
4. Characterize the components and chemical and physical properties of municipal solid waste (MSW).
5. Describe waste collection, recycling, and materials recovery techniques for MSW.
6. Discuss waste disposal techniques and technologies.
7. Summarize requirements for hazardous waste generation, transportation, treatment, storage, and disposal.

Credits
Upon completion of this course, the students will earn three (3) hours of college credit.

Course Structure
1. **Unit Learning Outcomes**: Each unit contains Unit Learning Outcomes that specify the measurable skills and knowledge students should gain upon completion of the unit.
2. **Unit Lesson**: Each unit contains a Unit Lesson, which discusses unit material.
3. **Reading Assignments**: Each unit contains Reading Assignments from one or more chapters from the textbook. A Suggested Reading is listed in the Unit I study guide. The reading is not provided in the course, but students are encouraged to read the resource listed if the opportunity arises as it has valuable information that expands upon the lesson material.
4. **Unit Assessments**: This course contains eight Unit Assessments, one to be completed at the end of each unit. Assessments are composed of written response questions.
5. **Unit Assignments**: Students are required to submit for grading Unit Assignments in Units I-VIII. Specific information and instructions regarding these assignments are provided below. Grading rubrics are included with the Unit I-VIII Assignments. Specific information about accessing these rubrics is provided below.
6. **Ask the Professor**: This communication forum provides you with an opportunity to ask your professor general or course content related questions.
7. **Student Break Room**: This communication forum allows for casual conversation with your classmates.
CSU Online Library

The CSU Online Library is available to support your courses and programs. The online library includes databases, journals, e-books, and research guides. These resources are always accessible and can be reached through the library webpage. To access the library, log into the myCSU Student Portal, and click on “CSU Online Library.” You can also access the CSU Online Library from the “My Library” button on the course menu for each course in Blackboard.

The CSU Online Library offers several reference services. E-mail (library@columbiasouthern.edu) and telephone (1.877.268.8046) assistance is available Monday – Thursday from 8 am to 5 pm and Friday from 8 am to 3 pm. The library’s chat reference service, Ask a Librarian, is available 24/7; look for the chat box on the online library page.

Librarians can help you develop your research plan or assist you in finding relevant, appropriate, and timely information. Reference requests can include customized keyword search strategies, links to articles, database help, and other services.

Unit Assignments

Unit I PowerPoint Presentation

Create a 7- to 10-slide PowerPoint Presentation that summarizes the history of waste management and regulation. Use the notes section in PowerPoint to narrate your presentation. Be sure to address the following:

- Provide one example of how a pre-industrial (before the 18th century) society or civilization handled its waste.
- Include the main events that occurred during each of the periods defined in the textbook (post-war, globalization, and implementation and progress).
- Describe the five main international bodies concerned with waste.
- Define RCRA, NEPA, and CERCLA, and discuss how they influence waste management.

All sources used, including the textbook, must be cited and referenced according to APA style. Be sure to include in-text citations on your slides, and provide a reference slide that lists all of your sources.

Please follow the Unit I Success Center Power Point Presentation Guide for developing your PowerPoint as it contains the best practices and strategies for creating your slides. Click here to access the Success Center Guide, Creating a Scholarly PowerPoint: Best Practices and Citation Information.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit II Case Study

Research the Mount Polley mine spill. Write a case study of at least two pages (not including title and reference pages) on this event. Your case study should address the following items:

- Describe the incident and its environmental impact.
- Summarize the physical and chemical characteristics of the waste.
- The article mentions poor regulation and oversight, an industry-friendly attitude, and political contributions from the mining company as contributing factors in the spill. Which of these do you think could have contributed the most? Take a position and defend it, using at least one outside resource.
- Discuss one factor that may have contributed to the accident that was not mentioned in the article.

Your case study should include at least four credible sources, including the textbook. All sources used, including the textbook, must be cited and referenced according to APA style.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit III PowerPoint Presentation

Imagine that you work for your state’s environmental protection agency in the waste management division. Your boss has asked you to create a presentation on household hazardous waste (HHW) to give to community groups in an effort to encourage people to dispose of HHW properly.
Create a 7- to 10-slide PowerPoint presentation that summarizes the environmental and health risks of household hazardous waste. Use the notes section in PowerPoint to narrate your presentation. Your presentation should address the following topics:

- What is HHW?
- Why is it important to dispose of HHW properly?
- What are some best practices that people should follow to dispose of HHW properly?
- What regulations cover HHW?

All sources used, including the textbook, must be cited and referenced according to APA style. Be sure to include in-text citations on your slides, and provide a reference slide that lists all of your sources.

Please follow the Unit I Success Center Power Point Presentation Guide for developing your PowerPoint as it contains the best practices and strategies for creating your slides. Click [here](#) to access the Success Center Guide, *Creating a Scholarly PowerPoint: Best Practices and Citation Information*.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit IV Article Critique**

Write an Article Critique of at least two pages (not including title and reference pages) on the article listed below:


You can find this point-counterpoint article in the GreenFILE database of the CSU Online Library. The article presents opposing arguments, made by Richard Gilbert and Mark Winfield, one in favor of incineration over landfilling and one against. Your paper should address the following topics:

- Describe three key arguments made by each author.
- Do the authors’ arguments support their main points?
- What evidence from the textbook supports the main points of each author? You should include one reference to the text for each side of the argument.
- Which side do you support? Be sure to back up your argument with at least one outside source.

All sources used, including the textbook, must be cited and referenced according to APA style.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit V Homework Assignment**

Use [www.piktochart.com](http://www.piktochart.com) to create an infographic on electronic waste. Create a free account and use a free template (one not labeled “pro”) to create your infographic. When you are done, click Download on the upper right-hand side of the screen. Choose .jpeg as the file format, and download the image to your computer for submission in Blackboard. *Note:* In the Download window, you may have to right-click your infographic and click Save As to get it to save where you would like it to save on your computer. Your infographic should contain the following information:

- Mass composition of metals for electronic scrap,
- Major hazardous components in waste electric and electronic equipment,
- Amount of e-waste generated by households,
- The hierarchy of treatment for e-waste, and
- Environmental effects of e-waste.

The textbook contains more data than can be put on the infographic. Part of this assignment is to interpret the data in order to communicate what you decide is important. You may even want to manipulate the data (add some of the e-waste categories from Table 20.3 together, for example) to create a meaningful infographic. Your goal should be to educate someone about what e-waste is, why it is important, and what actions should be taken all in one graphic. Be creative!

With your assignment submission, include a document that contains your APA-formatted references for this assignment.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.
Unit VI Essay

Water Quality Report

Imagine that you are in charge of water quality for a local branch of your state’s Department of Environmental Protection. It is an agricultural region with several large industrial farms and concentrated animal feeding operations (CAFOs). There have been several algal blooms in local lakes that have affected tourism and resulted in dead zones in the lakes. Your boss has asked you to write a report that describes the situation, analyzes three solutions, and uses one of those solutions in an overall management plan for the region.

Your report should address the following:

- Describe the environmental conditions and chemical processes that are leading to the dead zones.
- Include a two-paragraph summary of three different methods of controlling the agricultural runoff in the area. These methods should be from studies you find in the CSU library in a peer-reviewed journal. Each summary should consist of a description of the study, its methods, and its results.
- Prepare a plan of action for the region that uses one of the proposed solutions you have analyzed, along with your reasoning for choosing the solution.

Your paper should be a minimum of two pages in length (not including title and references pages) and follow APA style.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit VII PowerPoint Presentation

Use the CSU Online Library to research a hazardous waste incident such as the Love Canal or Minimata Bay incident. Create a 7- to 10-slide PowerPoint presentation on the incident you choose. You should thoroughly describe the details of the incident and analyze the causes and effects. Your presentation should address the following:

- Provide a brief history of RCRA and what aspects of waste it regulates.
- What was the cause of the incident? What types of waste were involved?
- What were the environmental and human health consequences?
- What regulations were in place at the time of the incident? Were they followed?
- What do you think could have been done to prevent the incident?
- Could this incident happen today with the regulations we have in place? Why, or why not?

Instead of using speaker’s notes, you will write a script and create a voice-over for your presentation. All sources used, including the textbook, must be cited and referenced according to APA style. Be sure to include in-text citations on your slides, and provide a reference slide that lists all of your sources.

Please follow the Unit I Success Center Power Point Presentation Guide for developing your PowerPoint as it contains the best practices and strategies for creating your slides. Click here to access the Success Center Guide, Creating a Scholarly PowerPoint: Best Practices and Citation Information.

If you are unsure how to add an audio recording to a PowerPoint Presentation, please see the following tutorial. Click here to access the Success Center Guide, Adding Audio to a PowerPoint.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit VIII Research Paper

This course covers many different waste streams. For your final project, choose one waste stream (you may use any chapter as your topic), and provide an in-depth analysis of that waste stream. Your paper should address the following:

- Describe chemical and physical characteristics of the waste stream.
- Discuss the most significant problems with managing the waste stream.
- Discuss the regulations that apply to your chosen waste stream.
- Analyze the treatment technologies and management techniques for the waste stream.
- Make an argument for the best course of action for managing the waste.
Your Research Paper must be a minimum of five pages in Times New Roman 12-point font (not including title and reference pages) in APA style.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**APA Guidelines**

The application of the APA writing style shall be practical, functional, and appropriate to each academic level, with the primary purpose being the documentation (citation) of sources. CSU requires that students use APA style for certain papers and projects. Students should always carefully read and follow assignment directions and review the associated grading rubric when available. Students can find CSU's Citation Guide by clicking here. This document includes examples and sample papers and provides information on how to contact the CSU Success Center.

**Grading Rubrics**

This course utilizes analytic grading rubrics as tools for your professor in assigning grades for all learning activities. Each rubric serves as a guide that communicates the expectations of the learning activity and describes the criteria for each level of achievement. In addition, a rubric is a reference tool that lists evaluation criteria and can help you organize your efforts to meet the requirements of that learning activity. It is imperative for you to familiarize yourself with these rubrics because these are the primary tools your professor uses for assessing learning activities.

Rubric categories include: (1) Discussion Board, (2) Assessment (Written Response), and (3) Assignment. However, it is possible that not all of the listed rubric types will be used in a single course (e.g., some courses may not have Assessments).

The Discussion Board rubric can be found within Unit I’s Discussion Board submission instructions.

The Assessment (Written Response) rubric can be found embedded in a link within the directions for each Unit Assessment. However, these rubrics will only be used when written-response questions appear within the Assessment.

Each Assignment type (e.g., article critique, case study, research paper) will have its own rubric. The Assignment rubrics are built into Blackboard, allowing students to review them prior to beginning the Assignment and again once the Assignment has been scored. This rubric can be accessed via the Assignment link located within the unit where it is to be submitted. Students may also access the rubric through the course menu by selecting “Tools” and then “My Grades.”

*Again, it is vitally important for you to become familiar with these rubrics because their application to your Discussion Boards, Assessments, and Assignments is the method by which your instructor assigns all grades.*

**Communication Forums**

These are non-graded discussion forums that allow you to communicate with your professor and other students. Participation in these discussion forums is encouraged, but not required. You can access these forums with the buttons in the Course Menu. Instructions for subscribing/unsubscribing to these forums are provided below.

*Once you have completed Unit VIII, you MUST unsubscribe from the forum; otherwise, you will continue to receive e-mail updates from the forum. You will not be able to unsubscribe after your course end date.*

[Click here for instructions on how to subscribe/unsubscribe and post to the Communication Forums.](#)

**Ask the Professor**

This communication forum provides you with an opportunity to ask your professor general or course content questions. Questions may focus on Blackboard locations of online course components, textbook or course content elaboration, additional guidance on assessment requirements, or general advice from other students.
Questions that are specific in nature, such as inquiries regarding assessment/assignment grades or personal accommodation requests, are NOT to be posted on this forum. If you have questions, comments, or concerns of a non-public nature, please feel free to email your professor. Responses to your post will be addressed or emailed by the professor within 48 hours.

Before posting, please ensure that you have read all relevant course documentation, including the syllabus, assessment/assignment instructions, faculty feedback, and other important information.

**Student Break Room**

This communication forum allows for casual conversation with your classmates. Communication on this forum should always maintain a standard of appropriateness and respect for your fellow classmates. This forum should NOT be used to share assessment answers.

**Grading**

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<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Unit I Assessment</td>
<td>6%</td>
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<tr>
<td>Unit II–VIII Assessments (7 @ 4%)</td>
<td>28%</td>
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<tr>
<td>PowerPoint Presentations (3 @ 7%)</td>
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<td>Unit II Case Study</td>
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<td>Unit IV Article Critique</td>
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<td>Unit V Homework</td>
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<td>Unit VI Essay</td>
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<td><strong>Total</strong></td>
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**Course Schedule/Checklist (PLEASE PRINT)**

The following pages contain a printable Course Schedule to assist you through this course. By following this schedule, you will be assured that you will complete the course within the time allotted.
By following this schedule, you will be assured that you will complete the course within the time allotted. Please keep this schedule for reference as you progress through your course.

### Unit I
**Introduction to Waste Management, Regulation, Collection, and Green Engineering**

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<thead>
<tr>
<th>Review:</th>
<th>Unit Study Guide</th>
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<tr>
<td>Read:</td>
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<td></td>
<td><strong>Chapter 1</strong>: Trends in Waste Management</td>
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<td><strong>Chapter 2</strong>: Green Engineering and Sustainable Design Aspects of Waste Management</td>
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<td><strong>Chapter 3</strong>: Regulation of Wastes</td>
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<td><strong>Chapter 4</strong>: Waste Collection</td>
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<td><strong>Suggested Reading</strong>: See Study Guide</td>
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<td><strong>Assessment</strong></td>
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<td><strong>PowerPoint Presentation</strong></td>
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**Notes/Goals:**

### Unit II
**Mining, Metal, Radioactive, and Municipal Waste Management**

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<th>Unit Study Guide</th>
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<td>Read:</td>
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<td></td>
<td><strong>Chapter 5</strong>: Mine Waste: A Brief Overview of Origins, Quantities, and Methods of Storage</td>
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<td><strong>Chapter 6</strong>: Metal Waste</td>
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<td><strong>Chapter 7</strong>: Radioactive Waste Management</td>
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<td><strong>Chapter 8</strong>: Municipal Waste Management</td>
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<td><strong>Assessment</strong></td>
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<td><strong>Case Study</strong></td>
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**Notes/Goals:**

### Unit III
**Introduction to Waste Management, Regulation, Collection, and Green Engineering**

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<td>Read:</td>
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<td><strong>Chapter 10</strong>: Recovered Paper</td>
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<td><strong>Chapter 11</strong>: Glass Waste</td>
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<td><strong>Chapter 12</strong>: Textile Waste</td>
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<td><strong>Chapter 13</strong>: Chemicals in Waste: Household Hazardous Waste</td>
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<td><strong>Assessment</strong></td>
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<td><strong>PowerPoint Presentation</strong></td>
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**Notes/Goals:**
### Unit IV: Reusing and Treating Waste

**Review:**
- Unit Study Guide

**Read:**
- Chapter 14: Reusing Nonhazardous Industrial Waste Across Business Clusters
- Chapter 15: Construction Waste
- Chapter 16: Thermal Waste Treatment
- Chapter 17: Thermochemical Treatment of Plastic Solid Waste

**Submit:**
- Assessment
- Article Critique

### Unit V: Ocean Pollution, Electronic Waste, Tire Recycling, and Battery Waste

**Review:**
- Unit Study Guide

**Read:**
- Chapter 19: Ocean Pollution
- Chapter 20: Electronic Waste
- Chapter 21: Tyre Recycling
- Chapter 22: Battery Waste

**Submit:**
- Assessment
- Homework Assignment

### Unit VI: Medical Waste, Agricultural Waste, Military Waste, and Space Waste

**Review:**
- Unit Study Guide

**Read:**
- Chapter 23: Medical Waste
- Chapter 24: Agricultural Waste and Pollution
- Chapter 25: Military Solid and Hazardous Wastes—Assessment of Issues at Military Facilities and Base Camps
- Chapter 26: Space Waste

**Submit:**
- Assessment
- Essay

Notes/Goals:
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<tr>
<td>Read:</td>
<td>- Chapter 27: Hazardous Wastes</td>
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<td>- Chapter 28: Thermal Pollution</td>
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<td>- Chapter 29: Land Pollution</td>
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<td>- PowerPoint Presentation</td>
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<td>Review:</td>
<td>- Unit Study Guide</td>
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<tr>
<td>Read:</td>
<td>- Chapter 30: Landfills – Yesterday, Today and Tomorrow</td>
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<td>- Chapter 31: Pollution Management and Responsible Care</td>
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<td>- Chapter 32: Risk Assessment, Management, and Accountability</td>
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<td>Submit:</td>
<td>- Assessment</td>
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<td>- Research Paper</td>
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