



Broward Community College

Course Outline

STATUS: A

COMMON COURSE NUMBER: EVS 1671

COURSE TITLE: Hazardous Materials Recovery and Disposal

CREDIT HOURS: 3

CONTACT HOURS BREAKDOWN:

Lecture/Discussion	<u> 48 </u>
Lab	<u> 00 </u>
Other	<u> 8(field trips) </u>
Contact Hours/Week	<u> 3.5 </u>

CATALOG COURSE DESCRIPTION:

Prerequisite: CHM 1025, EVR 1862

Corequisite: NONE

This course is designed to explain the methods of recovery, incineration and/or disposal of hazardous waste. Topics include contracting with qualified disposal organizations, obtaining permits and ensuring regulatory compliance of hazardous waste. Field trips required.

General Education Requirements - Associate of Arts Degree, meets Area(s):
 General Education Requirements - Associate in Science Degree, meets Area(s):

UNIT TITLES:

1. Overview of Physical and Chemical Characteristics of Hazardous Materials and Wastes
2. Resource Recovery Technologies
3. Treatment Technologies
4. Alternative Disposal Technologies
5. Offsite Treatment and Disposal Facilities
6. Selection of Appropriate Resource Recovery, Treatment, Incinerations and Other Disposal Technologies
7. Qualified Disposal Organizations

I. Course Overview:

Upon successful completion of this course, the students should be able to demonstrate the technical skills required to assist the plant managers and engineers in developing an environmentally acceptable and economically viable hazardous materials and waste management program.

II. Units:

Unit 1. Overview of Physical and Chemical Characteristics of Hazardous Materials and Wastes

General Outcome:

1.0 The students should be able to characterize and identify hazardous materials and wastes.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Characterize hazardous materials and hazardous wastes physically and chemically.
- 1.2 Describe the nature of the tests which characterize hazardous waste.
- 1.3 Identify substances in a hazardous material that are dangerous, and describe how to deal with these substances.
- 1.4 Describe what makes a waste hazardous.

Unit 2. Resource Recovery Technologies

General Outcome:

2.0 The students should be able to discuss the principles of resource recovery and describe various recovery technologies.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Recognize resource recovery opportunities in various production processes.
- 2.2 Recognize waste reduction opportunities.
- 2.3 Describe the general principles of resource recovery technologies.
- 2.4 Describe specific resource recovery technologies including distillation, reverse osmosis and ion exchange.
- 2.5 Explain hazardous waste exchange operations.

Unit 3. Treatment Technologies

General Outcome:

3.0 The students should be able to describe various treatment technologies for disposal of hazardous materials and select the appropriate treatment for a given hazardous waste.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

3.1 Identify appropriate treatment alternatives for hazardous materials or wastes requiring offsite disposal.

3.2 Identify various treatment technologies which reduce or eliminate the hazardous properties of materials or wastes marked for disposal.

3.3 Match a hazardous material or waste with an acceptable treatment technology.

Unit 4. Alternative Disposal Technologies

General Outcome:

4.0 The students should be able to describe various disposal technologies and select the appropriate method for a given waste.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Describe several disposal technologies.
- 4.2 Identify appropriate disposal technologies for hazardous materials and wastes being handled at a given facility.
- 4.3 Select the most effective disposal technologies for a given hazardous material or waste.

Unit 5. Offsite Treatment and Disposal Facilities

General Outcome:

5.0 The students should be able to evaluate and select appropriate treatment, disposal, and storage facilities.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

5.1 Describe the function of offsite treatment and disposal facilities.

5.2 Assist in developing evaluation strategies for the analysis of offsite treatment and disposal facilities.

5.3 Explain the regulatory requirements to be met by treatment, storage, and disposal (TSD) facilities.

5.4 Describe various methodologies and tools used in evaluating TSD facilities.

Unit 6. Selection of Appropriate Resource Recovery, Treatment, Incinerations or Other Disposal Technologies

General Outcome:

6.0 The students should be able to describe, evaluate, and select appropriate disposal technologies including resource recovery, treatment, and incineration.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

6.1 Define the general principles for selecting treatment or disposal alternatives for a given hazardous material or waste.

6.2 Develop criteria for identifying acceptable treatment or disposal alternatives for managing hazardous materials or wastes.

6.3 Select appropriate treatment or disposal technologies for managing a given hazardous material or waste.

Unit 7. Qualified disposal Organizations

General Outcome:

7.0 The students should be able to evaluate and select qualified disposal organizations and assist in the bidding process.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

7.1 Assist in developing plans for acceptable management strategies for handling hazardous materials or waste.

7.2 Compile lists of prospective contractors for waste disposal.

7.3 Assist in developing bid packages for hazardous waste disposal.

7.4 Assist in evaluating and selecting prospective contractors for hazardous materials and waste disposal.