

**COURSE CODE:** ENE-422  
**COURSE NAME:** Industrial Waste Management  
**CREDIT HOURS:** Theory = 3 Practical = 0 Total = 3  
**CONTACT HOURS:** Theory = 48 Practical = 0 Total = 48  
**PREREQUISITE:** None  
**MODE OF TEACHING:** Three hours of lecture per week

**Course Description:**

The course will present techniques to minimize waste generation in industries and discuss the developments in research, and industrial approaches to make better use of engineering to minimize waste for sustainability.

**TOPICS COVERED:**

<b>Week#</b>	<b>Topics</b>
1	Introduction: Urbanization and industrialization
2	Nature and Origin of Pollutants
3	Industrial Pollution Control: Standards and Economic Tools
4	Monitoring and Sampling
5	Wastewater Treatment: Equalization and Neutralization
6	Biological Treatment Processes
7	Overview of Industrial Pollution Management, Industrial Processes
8	Waste Characteristics and Treatment
9	<b>Midterm Exam – MSE</b>
10	Waste Inventory: Rapid Assessment Technique
11	Central Effluent Treatment Plant (CETP) and Sludge Management
12	Textile Industry waste sources and management
13	Pulp and paper industry waste sources and management
14	Tannery Waste Management
15	Waste Audits and their types

16	Wastewater reuse
17	Field Visit and report
18	<b>End Semester Exam</b>

**Text and Material:**

1. Waste Treatment in the Process Industries, Taylor & Francis Group, LLC, edited by Lawrence K. Wang, Yung-Tse Hung, Howard H. Lo, and Constantine Yapijakis
2. Guide for Industrial Waste Management - US EPA, 2016
3. Industrial Wastewater Treatment, Recycling and Reuse 1st Edition (2014) by Vivek V. Ranade, Vinay M Bhandari
4. Industrial Wastewater Management, Treatment, and Disposal, 3e MOP FD-3 (WEF Manual of Practice) 3rd Edition by Water Environment Federation
5. Michael D. LaGrega, Phillip L. Buckingham and Jeffrey C. Evans, Hazardous Waste Management, Reissue Edition, 2010

**ASSESSMENT SYSTEM:**

<b>Theoretical/Instruction</b>	<b>100%</b>
Assignments	10%
Quizzes	15%
Mid Semester Exam	25%
End Semester Exam	50%
<b>Practical Work</b>	<b>0%</b>
Lab Attendance	0%
Lab Report	0%
Lab Quiz	0%
Lab Rubrics	0%