

Faculty of Engineering & Technology

Pollution Control

Information :

Course Code : MPR 563

Level : Undergraduate

Course Hours : 2.00- Hours

Department : Specialization of Mechatronics Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Mohamed Ahmed Mahmoud Karali	2
Assistant Lecturer	Zakaria Mostafa Abdo Salim Marouf	3

Area Of Study :

- Prepare students to understand fundamentals of pollution due to combustion
- Train the students to apply the fundamental principles of gas pollution and particulate control
- Prepare students to understand fundamentals of thermal and water pollution
- Prepare students to understand reasons of global effects of pollutants
- Develop students' skills for analyzing experimental data and working in teams

Description :

Classification of sources and effects of pollution especially those which are related to mechanical power engineering (air pollution, noise and work environment pollution, thermal pollution, pollution of water resources, pollution of solid wastes), Global environmental pollution problems, Methods for controlling different types of pollution, Standard specifications for clean environment.

Course outcomes :

a. Knowledge and Understanding: :

1 -	Identify the particulate pollutants in air.
2 -	Identify the main techniques used to clean atmospheric air from particulates.
3 -	Identify the main causes of global warming and ozone layer depletion.
4 -	Summarize the gaseous pollutants emitted from car engine.
5 -	Distinguish methods and techniques used to prevent pollutants to the atmosphere emitted from car engines.

b. Intellectual Skills: :

1 -	Analyse the particulate contents carried within flowing gas or air.
2 -	Select appropriate method to collect solid particles carried by flowing gas, making use of the distribution pattern of particulate size.
3 -	Propose engine design and techniques to make emitted gas from engines clean from harmful species.

c. Professional and Practical Skills: :

1 -	Analyse the record data in the laboratory.
-----	--

2 -	Prepare engineering drawings, computer graphics, and write specialized technical reports.
3 -	Prepare design of one of the equipment used in filtration of gases in order to make them free of particles and pollutants.
d.General and Transferable Skills :	
1 -	Collaborate effectively within team.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Types of pollution (air, water, soil) ; pollution sources: natural and anthropogenic sources.	3	2	1
Effects of pollution on living creatures and human being.	3	2	1
Types of air pollutants and their effects.	3	2	1
Causes leading to global warming.	3	2	1
Causes and chemical reactions leading to ozone layer depletion.	3	2	1
Methods of cleaning air from particulates.	3	2	1
Analysis of particulate pollutants: size distribution functions, count, surface, and weight mean diameter.	3	2	1
Baghouse- type of cleaning gases: theory and choice.	3	2	1
Gravity-settling chamber: theory and design.	3	2	1
Cyclone type of gas cleaning from particulates, theory and design.	3	2	1
Electrostatic precipitator (ESP), theory and design.	3	2	1
Wet Scrubbers: theory and design.	3	2	1
Methods of controlling gaseous pollutants emitted from automobiles.	6	4	2

Teaching And Learning Methodologies :

Lecture
Tutorial
Labs

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00		
Laboratory reports	15.00		
Midterm Exam 1	15.00		
Midterm Exam 2	15.00		
Oral Exam	10.00		
Quiz	5.00		

