

## Faculty of Engineering & Technology

### Plant Engineering and Maintenance

#### Information :

**Course Code :** MPR 561

**Level :** Undergraduate

**Course Hours :** 2.00- Hours

**Department :** Specialization of Mechatronics Engineering

#### Instructor Information :

Title	Name	Office hours
Associate Professor	Hassan Mohamed Shams Eldin Elsayed Eleashy	4
Teaching Assistant	Christopher Nashaat Najib Benjamin	

#### Area Of Study :

- 1- To gain knowledge of plant engineering and maintenance.
- 2- To become familiar with maintenance management and control engineering.
- 3- To study the different maintenance management types.
- 4- To become familiar with maintenance materials control.
- 5- To become familiar with the available maintenance management software.

#### Description :

Plant engineering, Utilities, Energy and power systems, Material handling and storage, Environmental control, Waste disposal, Pollution control, Industrial safety, Maintenance planning, Planned maintenance, Corrective and predictive maintenance, Spare parts inventory control.

#### Course outcomes :

##### **a.Knowledge and Understanding: :**

1 -	Identify basic applied and engineering science.
2 -	Identify principles in the of design of mechanical components, different materials, and manufacturing technologies in the field of mechanical power engineering and some other engineering disciplines.
3 -	Identify principles in the field of design of fluid flow, thermodynamics, gas dynamics, turbo- machinery, heat transfer engineering and fundamentals of thermal and fluid processes
4 -	Develop conceptual and detailed design of construction projects and fluid power systems.

##### **b.Intellectual Skills: :**

1 -	Define the mechanical power engineering problems and evaluate designs, processes, and performance and propose improvements.
2 -	Derive different solution alternatives for the engineering problems, analyze, interpret data and design experiments to obtain new data, and evaluate the power losses in the fluid transmission lines and networks
3 -	Analyze the performance of the basic types of internal combustion engines, hydraulic machines, fluid power systems, subsystems and various control valves and actuators. Analyze the solution alternatives and choose the optimum one.
4 -	Creative thinking.

**c. Professional and Practical Skills: :**

1 -	Use laboratory, workshop equipment and field devices competently and safely.
2 -	Analyze the record data in the laboratory.
3 -	Prepare engineering drawings, computer graphics, and write specialized technical reports.
4 -	Write computer programs pertaining to mechanical power and energy engineering to describe the basic thermal and fluid processes mathematically, and use the computer software for their simulation and analysis.

**d. General and Transferable Skills: :**

1 -	Collaborate effectively within multidisciplinary team.
2 -	Share ideas, communicate effectively and work in stressful environment and within constraints.
3 -	Lead and motivate individuals and work with others according to the rules of the professional Ethics.
4 -	Use digital libraries and/or Learning systems and demonstrate efficient IT capabilities.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to Plant Engineering & maintenance			
Types of Maintenance & Strategies			
Maintenance Organization			
Maintenance Materials Control			
Quality and Safety in Maintenance			
Maintenance Costing			
Computerized Maintenance Management Systems (CMMS)			

**Teaching And Learning Methodologies :**

Lectures
Tutorials
Presentation & Discussion
Brain storming

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Attendance & Quizzes	10.00	1	
Final examination	40.00	16	
Mid-term examination(s)	30.00	6	
Term Paper	20.00	11	