FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Electromechanical Design

Information :

Course Code :	MAN 515	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Mechatronics Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Ziad Ahmed Ibrahim Abdo	4
Teaching Assistant	Mohamed Samir Ahmed Mohamed	1

Area Of Study :

The course provides students with the basic knowledge and skills related to electro-mechanical machine design.

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.
c.Professional and Practical Skills: :	
1 -	Use laboratory, workshop e4quipment 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
Design of mechanical motion transmission systems			
Sensing and measurement of mechanical motion			
Sensor selection			
Electromechanical actuator selection and specification			
Sequential controller design			
Digital I/O			

Teaching And Learning Methodologies :

Lectures
Tutorial
Class discussions and activities
Homework and self-study

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00	4	
Attendance and Participation	10.00	6	
Final Exam	40.00	16	
Mid-term Exams	40.00	11	