FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Fundamentals of manufacturing Processes

Information :

Course Code :	MAN 321	**Level :**	Undergraduate	**Course Hours :**	2.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Samah Elsayed Elmetwally Elkhatib	1
Teaching Assistant	Donia Waheed Mohamed Abdelmonem Saleem	

Area Of Study :

Upon the completion of the course, students should be able to:
1. Design metal casting molds and specify process requirements.
2. Develop the process flow for a powder metallurgy and specify the design considerations.
3. Select the welding process required for any joining job.

Description :

Processing by casting: powder metallurgy, metal working, material removal, welding and joining, Processing of plastics and ceramics, Finishing processes, Materials recycling.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	• A detailed understanding of the metal casting processes.
2 -	• The ability to design metal casting molds and employ the different design considerations for casting.
3 -	• A detailed understanding of powder metallurgy process and design.
4 -	• A detailed understanding of different welding process and joint design and process selection.
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 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
Introduction to machining processes	4	2	2
Fundamentals of Metal Casting	8	4	4
Metal Casting Processes and Equipment	12	6	6
Metal Casting: Design, Materials and Economics	12	6	6
Powder-Metal Processing and Equipment	12	6	6
Fusion-Welding Processes	8	4	4

Teaching And Learning Methodologies :

Lectures
Tutorials
Presentation & Discussion
Brain storming

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00		
Attendance and Participation	10.00		
Final Exam	40.00		
Mid-term Exams	30.00		
Quizzez	10.00		

Books :

Book	Author	Publisher
Manufacturing Engineering and Technology	Serope Kalpakjian	Pearson