

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 :

By the end of the course the students will be able to:

- Get a basic idea of solidification and casting, alloys, structure and properties, cast-ing products and applications,
- know about the different casting processes, mould and core-making, sand proper-ties and testing, behaviour of liquid metals, melting and melt treatment,
- Make design for a sound casting using basic equations and to specify the required moulding materials,
- Deal with casting quality control methods,

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 -	know different casting processes, capabilities, and limitations.
2 -	Identify of solidification and casting, alloys, structure and properties, casting products and applications.
3 -	Explain different casting processes, mold and core-making, sand prop-erties and testing, behavior of liquid metals, melting and melt treat-ment.
4 -	State the design basics for a sound casting using basic equations, and to specify the required molding materials.

b.Intellectual Skills: :

1 -	Design casting pattern
2 -	Design casting mould using basic equations.
3 -	Design for a sound casting using basic equations.

c.Professional and Practical Skills: :

1 -	Differentiate between different casting processes, mould and core-making, sand properties and testing, behaviour of liquid metals, melting and melt treatment.
2 -	Deal with design of casting mold, and cores.

3 -	Analyse the casting and predict the various casting defects.
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d.General and Transferable Skills: :

1 -	Make scientific Presentation in the casting project.
2 -	Write technical reports about the special casting processes.
3 -	Practice working in team in the casting project.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to metal casing processes	4	2	2
Casting wrought alloys, continuous casting	4	2	2
Shaped casting, & products, and processes	8	4	4
Sand, molding and core-making processes	4	2	2
Casting design, and pattern design	8	4	4
Special Casting Techniques	8	4	4
Rapid Prototyping	4	2	2
Design of gating system	4	2	2
Design of feeding system	4	2	2
Heat extraction & solidification	4	2	2
Liquid metal behavior & fluid dynamics	4	2	2
Casting project	4	2	2

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion
Experiential learning
Search

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00		
Attendance and Participation	10.00		
Final Exam	40.00	16	
First Mid-term	15.00	6	
Quizzes	10.00		
Second Mid-term	15.00	11	

Books :

Book	Author	Publisher
Manufacturing Engineering and Technology	Serope Kalpakjian	Pearson