

Faculty of Engineering & Technology

Production Engineering 1

Information :

Course Code : MAN 221

Level : Undergraduate

Course Hours : 2.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Associate Professor	Tarek Mohamed Mahmoud Moussa	
Assistant Lecturer	Anas Mohamed Abdelrahman Ali	
Assistant Lecturer	Samah Elsayed Elmetwally Elkhatib	

Area Of Study :

Introduction to machining processes, Cutting elements, Cutting with single edge cutting tools, Cutting tool materials and its characteristics, Cutting velocity and feed, Machining time, Power consumption in cutting, Practical machining operations: turning, shaping, drilling, Cutting with multi-edge, Cutting tools: milling, grinding, lapping, Simple dividing and dividing head, Basic elements of machine tools and specifications, Work fixation, Tool fixation, Process sheet, Machining time allowances, Cost elements, Breakeven point.

Course outcomes :

a.Knowledge and Understanding: :

1 -	A detailed understanding of the fundamentals of machining forces and analysis.
2 -	The ability to select the cutting-tool materials and cutting fluids.
3 -	The ability to evaluate the machining parameters and material removal rates for turning and drilling.
4 -	The ability to evaluate the machining parameters and material removal rates for milling

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 -	Select the proper machining processes for any component
2 -	Develop the process flow of the machining process.
3 -	Calculate the different machining parameters and select the cutting tool materials and cutting fluids.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to machining processes	4	2	2
Fundamentals of machining	8	4	4
Cutting-Tool Materials and Cutting Fluids	12	6	6
Machining Processes: Turning and hole making	12	6	6
Machining Processes: Milling, Broaching, sawing, filing, and Gear Manufacturing	12	6	6
Machining Centers, Machine-tool Structures, and Machining Economics	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		
Quizzes	10.00		

Books :

Book	Author	Publisher
Manufacturing Engineering and Technology	Serope Kalpakjian	Pearson

