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
Lecturer	SAMAH ELSAYED ELMETWALLY ELKHATIB	2
Teaching Assistant	Ahmed Ibrahim Sadek Mostafa Elgindy	

Area Of Study :

Prepare students to get a basic idea of machining processes, Cutting elements, cutting with single edge cutting tools, Cutting tool materials and its characteristics.
Develop the students' knowledge about the different machining operations and different Cutting tools for turning, shaping, drilling, Cutting with multi-edge, milling, grinding operation.
Prepare students to calculate Machining time allowances, Machining Cost and Machining elements cost and Determination Break-even point.

Description :

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, Break-even point.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Explain the different tool angles for single point cutting tool
2 -	Describe the different motions occur while machining in all machining operation
3 -	distinguish the differences between all common machining processes (turning, milling, shaping, planning and grinding)
4 -	identify a basic idea of machining process and fundamental of metal cutting

b.Intellectual Skills: :

1 -	Modify machining parameters to find the best cutting speed to reach min machining cost or min machine time
2 -	Determine machining parameters to get the estimate of machining time and tool life
3 -	Calculate the force analysis of metal cutting process in orthogonal cutting condition
4 -	Apply mathematical calculations to define relations control chip geometry in turning and milling operations

c.Professional and Practical Skills: :

1 -	Analyse the sources affecting tool life and wear mechanisms
2 -	Perform mathematical calculations to estimate the required power to machining certain material under given cutting conditions in orthogonal cutting
3 -	Classify all cutting forces in orthogonal cutting conditions

d.General and Transferable Skills: :

1 -	Acquire entrepreneurial skills.
2 -	Effectively manage tasks, time, and resources.
3 -	Communicate effectively.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Cutting Elements, Cutting With single Edge Cutting Tools, Chip Formation, Mechanics of Cutting and Power Consumption	6	4	2
Cutting-Tool s: Materials and Characteristics and Tool Wear	6	4	2
Cutting Fluids	4	2	2
Machining Processes: Turing, Shaping and Hole Making	8	6	2
Introduction to Machining Operations	6	4	2
Machining Processes: Milling, Broaching, Sawing, Filling, and Gear Manufacturing	6	4	2
Fundamentals of Machining:	3	2	1
Machining Time, and Machining Economics Break-even point	6	4	2

Teaching And Learning Methodologies :

Interactive Lecture
Discussion
Problem-based Learning
Report
Experiential learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	5.00		
Final Exam	40.00		
Lab Exper.	5.00		
Mid- Exam 1I	20.00		
Mid- Exam I	20.00		
Oral Exam	5.00		
Quizzes	5.00		

Course Notes :
Lecture notes on the course moodle page, FUE website.

Recommended books :

Periodicals :
Journal of Metals, ASM, USA

Web Sites :
Websites on machining operation and machining economies