

Branch Name:	Mechanical Engineering
Program Code:	ET101
Course Name:	Mechanical Engineering Laboratory-III (Manufacturing)
Course Code:	2ET1010603P
Pre-requisite Course:	Zeal to learn the course

Course Objectives:

1. To provide an understanding of advanced manufacturing methods.
2. To get an idea of the dimensional & form accuracy of products.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
02	-	01	02	03	-	-	-	-	10	25	10	25	50

Contents:

Sr. No	Topic (Laboratory Practical)	Total Hours	Weightage (%)
1	Taper turning and external thread cutting using lathe	01	10
2	Contour milling using vertical milling machine	01	10
3	Spur gear cutting in milling machine	03	10
4	Measurement of cutting forces in Milling/ Turning process	01	10
5	CNC part programming	01	10
6	Drilling of a small hole using wire EDM	01	10
7	Microprocessor controlled pick & place robot	01	10
8	Use of Tool Maker's Microscope	01	05
9	Comparator and sine bar	01	05
10	Surface finish measurement equipment	01	10
11	Bore diameter measurement using micrometer and telescopic gauge	01	05
12	Use of Autocollimator	01	05

Reference Books:

1. Amitabha Ghosh and A.K. Mallick, Manufacturing Science. Affiliated East-West Press Pvt. Ltd. 2010.
2. M. P. Groover, Fundamentals of Modern Manufacturing: Materials, Processes, and Systems.
3. Bawa H.S, "Workshop Technology", Tata McGraw Hill, 1995.
4. Kumar D.S. "Mechanical Measurement and Control", Metropolitan book Co.

Course Learning Outcomes (CLO):

- Students who have undergone the course will be able to understand the measurement of mechanical properties of materials and will be able to characterize the dynamic behaviour of mechanical systems

CLO	Description	Bloom's Taxonomy Level
CLO1	To Understand the thread cutting using lathe machine	1 Remembering 2 Understanding
CLO2	To characterize spur gear cutting on milling machine	3 Applying 4 Analyze
CLO3	To learn the fundamentals of CNC part programming	2 Understanding 4 Analyze
CLO4	To understand Tool Maker's Microscope	2 Understanding 4 Analyze
CLO5	To understand Measurement of cutting forces in Milling/ Turning process	4 Analyze 5 Evaluating
CLO6	To identify the use of surface tester and autocollimator	6 Creating

Mapping of CLOs with POs & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	M		M			M						L	M	M
CLO2		H	M			M	M		H	M	M	L	M	L
CLO3	M	H	M	M		M	M		M	M	M	L	M	L
CLO4	H	M	M	M	M								M	
CLO5	H	L	M					H	L	M			L	
CLO6	M			M	H	M					L		H	

H: High, M: Medium, L: Low