

Branch Name:	Mechanical Engineering
Program Code:	ET402
Course Title:	Computer Aided Machine Drawing
Course Code:	2ET4020306
Pre-requisite Course:	-----

Course Objectives:

1. The subject caters to drafting practices, symbols, codes, norms, and standards generally used in industries Nowadays the market-driven economy demands frequent changes in product design to suit customer needs.
2. With the introduction of computers, the task of incorporating frequent changes as per requirement is becoming simpler. This course has been introduced as a Diploma to develop the skills of students so that they can generate various digital production drawings.
3. 2D and 3D drawings as required in the industry using various CAD software.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
0	0	4	2	-	-	20	30	50

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Introduction: • Basic know-how of computer hardware, software, and peripherals. • Concept and need of machine drawings. • Drafting, tolerance, and geometrical symbols used in machine drawing. • AutoCAD (Mechanical) screen, library, symbols, and templates in context of machine drawing. Drawing standards. (IS-696 /SP 46)(Drawing/printing/ storage)	04	05
2	2D Production Drawings: • Simple 2D production drawings of Mechanical components made up of a minimum 5 manufacturing operations using Auto CAD - Mechanical. • 2D assembly productions drawing of any one simple mechanical assembly made up of various manufacturing operations using AutoCAD - Mechanical). Take printouts of the above drawings using a Printer/ Plotter.	14	25
3	2D Parametric Drawings: • Concept and examples of parametric and non-parametric models. • Concept, examples, and applications of constraints and relations. • Simple 2D parametric drawings of machine components made up of various manufacturing operations each using sketcher mode.	10	20
4	3D Modeling using AutoCAD: • Introduction to AutoCAD-3D features and 2Dcommands overview. • D primitives-types and defining parameters. • User coordinate system (UCS) and its options. • 3D draw commands. • D modify and edit commands. • 3D viewing & views generation.		

	Surface modeling commands.		
5	Industrial Project Work: Prepare details and assembly drawings of part of the mechanical production system of Industries after the industrial visit and take a print of it. (Group project).	14	25

Reference Books:

- Machine Drawing including AutoCAD, Ajeet Singh, McGraw Hill
- Production Drawing, K L Narayan, New Age Publication
- Fundamental of Geometric Tolerance and dimensioning, Alex Krulikowski, Cengage Learning
- Engineering Graphics with AutoCAD, Sarkar. A.K, PHI India
- AutoCAD User Guide, Autodesk, Autodesk Press.

List of Open-Source Software/learning website:

- latest Version of Autodesk Auto CAD Mechanical.
- latest Version of Modeling software.
- Autodesk Exchange/ AUGI.
- PTC university tutorials.
- Video tutorials from YouTube and other resources

Course Learning Outcomes (CLO):

- Understand various commands to draw, edit, and modify 2D Production drawings/Machine Drawings of Mechanical Components on any small industrial components drawing.
- Create detailed drawings of various machine parts with elevations, plans, side views, and dimensioning with a bill of materials using (BOM) using CAD software like AutoCAD.
- Formulate a report of machine elements with a Sketch of components at each step with dimensions and a sequence of commands with names, options, and values.
- Generate various parametric drawings of mechanical components with all possible dimensions, tolerances, and levels of surface finish by using Auto CAD software.
- Create given project drawings with orthographic projection, bill of material, and report using Auto CAD software.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H							H					M	M		
CLO2	H	M					M	H					L	M		
CLO3	M		H				M	H						L	M	
CLO4	H	M		M									M	M		
CLO5	H			M							M	H	M	L	M	

H: High, M: Medium, L: Low