



SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Narsapur, West Godavari District, A.P. 53-4280

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester	
ME7T01	CAD/CAM	VII	Mechanical Engineering	5	2026-27	17-07-2026	
COURSE OUTCOMES:							
CO1	Explain the fundamentals of CAD/CAM and computer graphics used in product design. [K2]						
CO2	Differentiate the types modelling in CAD, curve and surface representation methods. [K3]						
CO3	Describe the NC and CNC systems and write the part programs for the simple components. [K2]						
CO4	Explain the principles of Group Technology and apply them in grouping parts, about the FMS system. [K2]						
CO5	Analyze the structure and integration of computer control systems and differentiate between the types of process planning methods. [K4]						
CO6	Summarize the implementation considerations of computer-aided process planning systems in industries. [K2]						
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method	
I	CO1- Explain the fundamentals of CAD/CAM and computer graphics used in product design. [K2]	1.1 Introduction to CAD/CAM					Chalk & Talk, PPT
		1.1.1	Computers in Industrial Manufacturing	T1, R1	1		
		1.1.2	Product life cycle	T1, R1	1		
		1.1.3	CAD/CAM Hardware: Basic structure	T1, T2	1		
		1.1.4	CPU, Memory Types	T1, R1	1		
		1.1.5	Input Devices & Display Devices	T1, T2	1		
		1.1.6	Hard copy Devices & Storage Devices	T1, T2	1		
		1.2 Computer Graphics					
		1.2.1	Raster scan graphics, coordinate system	T1, R1	1		
		1.2.2	Data base structure for graphics modeling	T1, R1	1		
		1.2.3	Transformation of geometry	T1, T2	1		
		1.2.4	2D & 3D Transformations	T1, R1	3		
		1.2.5	Mathematics of projections	T1, T2	1		
		1.2.6	Clipping	T1, R1	1		
		1.2.7	Hidden surface removal	T1, T2	1		
CBS			Bresenham's Line Algorithm	Web Source	1	Internet	
Total					16		

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Department of Mechanical Engineering

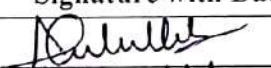
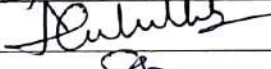
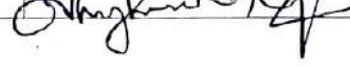


II	CO2: Differentiate the types modelling in CAD, curve and surface representation methods. [K3]	Geometric Modeling				Chalk & Talk, PPT, Video Lecture
		2.1	Requirements of GM	T1, R1	1	
		2.2	Geometric models	T1, R1	1	
		2.3	Geometric construction Methods	T1, T2	2	
		2.4	Curve Representation Methods	T1, R1	2	
		2.5	Surface Representation Methods	T1, R1	2	
		2.6	Solid Modelling	T1, T2	1	
		2.7	Basic Geometric Commands: Layer, Display Control Commands	T1, R1	2	
		2.8	Editing & Dimensioning Commands	T1, R1	1	
			B Spline and Bezier curve	Web Source	1	
Total				13		

III	CO3: Describe the NC and CNC systems and write the part programs for the simple components. [K2]	Part programming for NC machines				Chalk & Talk, PPT, Flipped Classroom
		3 1	Introduction, NC, NC modes,	T1, R1	1	
		3 2	NC elements, CNC machine tools,	T1, T2, R2	1	
		3 3	Structure of CNC machine Tool	T1, T2, R2	2	
		3 4	features of machining centre & turning centre	T1, T2	1	
		3 5	CNC part programming: Fundamentals	T1, R2	1	
		3 6	Manual part programming, Computer aided part programming	T1, T2	2	
		3 7	Direct numerical control and Adaptive control	T1, R2	2	
CBS		3 8	latest technological advancements in CNC machines: Six-axis machining	Web Source	1	Internet
Total					11	

IV	CO4: Explain the principles of Group Technology and apply them in grouping parts, about the FMS system. [K2]. CO6: Summarize the implementation considerations of computer-aided process planning systems in industries. [K2]	Group technology				Chalk & Talk, PPT, Quiz.
		4.1	Introduction, Part family	T1, T2	1	
		4.2	Coding and classification	T1, T2, R1	1	
		4.3	Production flow analysis, advantages and limitations	T1, T2	2	
		4.4	Computer aided process planning: Importance, types	T1, T2, R2	2	
		4.5	Retrieval Type & Generative Type.	T1, T2	1	
		4.6	Computer integrated manufacturing systems: Introduction	T1, T2	1	
		4.7	Types of manufacturing systems	T1, T2, R2	1	
		4.8	machine tools & related equipment	T1, T2	1	
		4.9	CIM benefits	T1, T2, R1	1	
CBS		4.10	Generative-AI, Computing Power, Datafication.	Web Source	1	Internet
Total					12	
V	CO5: Analyze the structure and integration of computer control systems and differentiate between the types of process planning methods. [K4].	Computer aided Quality Control				Chalk & Talk, PPT, Seminar Topic.
		5.1	Introduction, Computers in QC	T1, T2, R2	1	
		5.2	Inspection Methods: Contact inspection methods, non-contact Inspection Methods,	T1, T2	2	
		5.3	Optical and Non-Optical Inspection Methods	T1, T2, R1	1	
		5.4	Computer aided testing	T1, T2, R2	1	
		5.5	Integration of CAQC with CAD/CAM	T1, T2	2	
CBS		5.6	Inspection Technology, Machine Vision.	Web Source	1	Internet
Total					08	
CUMULATIVE PROPOSED PERIODS					60	

Text Books:	
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	CAD/CAM Principles and Applications by P N RAO / 3 rd Edition/TATA McGraw Hill Education/2010.
T2	CAD/CAM Computer Aided Design and Manufacturing by M. Groover & E. Zimmer/1 st Edition/ PEARSON Education/2013.
Reference Books:	
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	CAD/CAM Theory and Practice/Ibrahim Zeid/ 2 nd Edition/TATA McGraw Hill Education/2009
R2	CAD/CAM Concepts and Applications by Chennakesava R. Alavala/ 1 st Edition/ PHI Learning Pvt. Ltd., New Delhi/ 2008.
R3	Computer Numerical Control concepts and Programming – Warren S Seames/4 th Edition/ Delmar, a division of Thomson Learning(ISBN: 978-0766822900 / 0766822907)/ 2002.
Web Details	
1	https://www.nptelvideos.com/computer_graphics/computer_graphics_video_lectures.php
2	https://www.youtube.com/watch?v=0IgOapAtauM
3	https://www.youtube.com/watch?v=pPwyYFvRLts

		Name	Signature with Date
i.	Faculty	Abdul Azeez	
ii.	Course Coordinator	Abdul Azeez	
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iv.	Programme Coordinator	Dr. Francis Luther king	




Principal

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