



SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Narsapur, West Godavari District, A.P. 534280

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester	
20ME6T03	CAD/CAM	VI	Mechanical Engineering	6	2024-25	18-11-2024	
COURSE OUTCOMES							
CO1	Classify the hardware and software of CAD systems. [K2]						
CO2	Illustrate the curve representation and surface representation. [K3]						
CO3	Infer NC, CNC systems and basic programs using G-Codes, M-Codes, APT. [K2]						
CO4	Summarize the principles of Group Technology and apply them in grouping parts, CAPP and CIM importance. [K2]						
CO5	Discuss about Computer Aided Quality Control and FMS. [K2]						
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method	
I	CO1: Classify the hardware and software of CAD systems. [K2]	1.1 Introduction to CAD/CAM					Chalk & Talk, PPT & Active Learning Methods
		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	1		
		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					13		

II	CO2: Illustrate the curve representation and surface representation. [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	1	
		2.4	Curve Representation Methods	T1, R1	1	
		2.5	Surface Representation Methods	T1, R1	1	
		2.6	Solid Modelling	T1, T2	1	
		2.7	Basic Geometric Commands:			
		2.8	Layer, Display Control Commands	T1, R1	1	
		2.9	Editing & Dimensioning	T1, R1	1	
2.10	B Spline and Bezier curve	Web Source	1			
Total			10			

III	CO3: Infer NC, CNC systems and basic programs using G-Codes, M-Codes, APT. [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	1	
		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	T1, R2	1	
		3.7	Computer aided part programming	T1, T2	1	
		3.8	Computer aided part programming Problem	T1, R2	1	
		3.9	Direct numerical control and Adaptive control	T1, R2	1	
CBS	CBS	Latest technological advancements in CNC machines: Six-axis machining	Web Source	1	Internet	
Total			10			

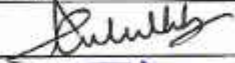

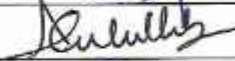

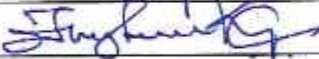
		Group technology				
IV	CO4: Summarize the principles of Group Technology and apply them in grouping parts, CAPP and CIM importance. [K2]	4.1	Introduction, Part family	T1, T2	1	Chalk & Talk, PPT, Quiz.
		4.2	Coding and classification	T1, T2, R1	1	
		4.3	Production flow analysis, advantages and limitations	T1, T2	1	
		4.4	Computer aided process planning: Importance, types	T1, T2, R2	1	
		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	Generative-AI, Computing Power, Datafication.	Web Source	1	Internet
				Total	10	
		Computer aided Quality Control				
V	CO5: Discuss about Computer Aided Quality Control and FMS. [K2]	5.1	Introduction, Computers in QC	T1, T2, R2	1	Chalk & Talk, PPT, Seminar Topic.
		5.2	Inspection Methods: Contact inspection methods	T1, T2	1	
		5.3	Non-contact Inspection Methods	T1, T2	1	
		5.4	Optical Inspection Methods	T1, T2, R1	1	
		5.5	Non-Optical Inspection Methods	T1, T2, R1	1	
		5.6	Computer aided testing	T1, T2, R2	1	
		5.7	Computer Aided Quality Control	T1, T2, R2	1	
		5.8	Integration of CAQC with CAD/CAM	T1, T2	1	
CBS	Inspection Technology, Machine Vision.	Web Source	1	Internet		
				Total	09	
				CUMULATIVE PROPOSED PERIODS	52	

Text Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	P N RAO, CAD/CAM Principles and Applications, 3 rd Edition, TATA McGraw Hill Education, 2010
T2	M. Groover & E. Zimmer, CAD/CAM Computer Aided Design and Manufacturing, 1 st Edition, Pearson Education, 2003

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Reference Books:	
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	Ibrahim Zeid, CAD/CAM Theory and Practice, 2 nd Edition, TATA McGraw Hill Education, 2009
R2	Chennakesava R. Alavala, CAD/CAM Concepts and Applications, 1 st Edition, Prentice Hall India Learning, 2008
R3	Warren S Seames, Computer Numerical Control concepts and Programming, 4 th Edition, Delmar Cengage Learning, 2001.
Web Details	
1	https://www.nptelvideos.com/computer_graphics/computer_graphics_video_lectures.php
2	https://www.youtube.com/watch?v=0lgOapAtauM
3	https://www.youtube.com/watch?v=pPwyYFvRLts

		Name	Signature with Date
i.	Faculty - 1	Mr. Abdul Azeez	
ii.	Faculty - 2	Dr. R. Sanjeev Kumar	
iii.	Course Coordinator	Mr. Abdul Azeez	
iv.	Module Coordinator	Dr. R. Sanjeev Kumar	
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Principal