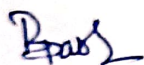



Lesson Plan for COMPUTER-AIDED DESIGN AND MANUFACTURING (TH.5a) , 4 th Semester, Mechanical Engg. (SUMMER-2026)		
Discipline: Mechanical Engg	Semester: 4 TH	Name of the Teaching Faculty: Sri B.K.Dash, Senior Lecturer, Mechanical
SUBJECT: COMPUTER-AIDED DESIGN AND MANUFACTURING (TH.5a)	No. of Days/ week class allotted=3	Semester Starts from 22.12.2025

WEEK	PERIOD	TOPICS TO BE COVERED
Unit-I: INTRODUCTION		
1	1	Product cycle- Design process- sequential and concurrent engineering
	2	Computer aided design — CAD system architecture
	3	Computer graphics — co-ordinate systems- 2D and 3D transformations
2	4	homogeneous coordinates
	5	Line drawing clipping- viewing transformation
	6	brief introduction to CAD and CAM
3	7	Manufacturing Planning, Manufacturing control
	8	Introduction to CAD/CAM
	9	CAD/CAM concepts, Types of production
4	10	Manufacturing models and Metrics
	11	Mathematical models of Production Performance
	12	Unit-II: GEOMETRIC MODELING
5	13	Representation of curves
	14	Hermite curve- Bezier curve
	15	B-spline curves-rational curves
6	16	Techniques for surface modeling
	17	surface patch- Coons and bicubic patches
	18	Bezier and B-spline surfaces
7	19	Solid modeling techniques
	20	CSG and B- rep
	21	Unit-III: CAD STANDARDS
8	22	Standards for computer graphics
	23	Graphical Kernel System (GKS)
	24	standards for exchange images
9	25	Open Graphics Library (OpenGL)
	26	Data exchange standards
	27	IGES, STEP, CALS etc.
10	28	communication standards
	29	Unit-IV:
	30	FUNDAMENTAL OF CNC AND PART PROGRAMING
11	31	Introduction to NC systems and CNC
	32	Machine axis and Co-ordinate system- CNC machine tools
	33	Principle of operation CNC- Construction features including structure
		Drives and CNC controllers
		2D and 3D machining on CNC
		Introduction of Part Programming

12	34	types — Detailed Manual part programming on Lathe & Milling machines using G codes and M codes
	35	types — Detailed Manual part programming on Lathe & Milling machines using G codes and M codes
13	36	Cutting Cycles, Loops, Sub program and Macros
	37	Cutting Cycles, Loops, Sub program and Macros
	38	Introduction of CAM package.
	Unit-V: CELLULAR MANUFACTURING AND FLEXIBLE MANUFACTURING SYSTEM (FMS)	
14	39	Group Technology(GT), Part Families
	40	Parts Classification and coding
	41	Simple Problems in Opitz Part Coding system
	42	Production flow Analysis–Cellular Manufacturing
15	43	Composite part concept–Types of Flexibility
	44	FMS — FMS Components — FMS Application & Benefits
	45	FMS Planning and Control — Quantitative analysis in FMS ME8691 Computer Aided Design and Manufacturing
15	46	Revision
	47	Revision
	48	Revision


 20/12/2025
 Concerned faculty


 20/12/2025
 HOD

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