

**Lesson Plan for COMPUTER-AIDED DESIGN AND MANUFACTURING (TH.5a),  
4<sup>th</sup> Semester, Mechanical Engg. (SUMMER-2026)**

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

WEEK	PERIOD	TOPICS TO BE COVERED
<b>Unit-I: INTRODUCTION</b>		
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	<b>Unit-II: GEOMETRIC MODELING</b> Representation of curves
5	13	Hermite curve- Bezier curve
	14	B-spline curves-rational curves
	15	Techniques for surface modeling
6	16	surface patch- Coons and bicubic patches
	17	Bezier and B-spline surfaces
	18	Solid modeling techniques
7	19	CSG and B- rep
	20	<b>Unit-III: CAD STANDARDS</b> Standards for computer graphics
	21	Graphical Kernel System (GKS)
8	22	standards for exchange images
	23	Open Graphics Library (OpenGL)
	24	Data exchange standards
9	25	IGES, STEP, CALS etc.
	26	communication standards
	27	<b>Unit-IV:</b> <b>FUNDAMENTAL OF CNC AND PART PROGRAMMING</b>
10	28	Introduction to NC systems and CNC
	29	Machine axis and Co-ordinate system- CNC machine tools
	30	Principle of operation CNC- Construction features including structure
11	31	Drives and CNC controllers
	32	2D and 3D machining on CNC
	33	Introduction of Part Programming

12	34	types — Detailed Manual part programming on Lathe & Milling machines using G codes and M codes
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	36	Cutting Cycles, Loops, Sub program and Macros
13	37	Cutting Cycles, Loops, Sub program and Macros
	38	Introduction of CAM package.
	<b>Unit-V:</b> <b>CELLULAR MANUFACTURING AND FLEXIBLE MANUFACTURING SYSTEM (FMS)</b>	
14	39	Group Technology(GT), Part Families
	40	Parts Classification and coding
	41	Simple Problems in Optiz 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

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20/12/2025  
Concerned faculty

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20/12/2025  
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