NARSIMHA REDDY ENGINEERING COLLEGE
UGC AUTONOMOUS INSTITUTION
Maisammaguda (V), Kompally - 500100, Secunderabad, Telangana State, India

UGC - **Autonomous** Institute
Accredited by **NBA & NAAC** with **'A'** Grade
Approved by **AICTE**
Permanently affiliated to **JNTUH**

NRCM
Your roots to success....

CAD/CAM

B. Tech. III Year I Semester

Course Code	Category	Hours/Week			Credits	Maximum Marks		
		L	**T**	**P**		**CIA**	**SEE**	**TOTAL**
23ME506	**ELECTIVE**	**3**	**0**	**0**	**3**	**30**	**70**	**100**
Contact Classes:60	**TutorialClasses:16**	**Practical Classes: Nil**				**TotalClasses:60**		

Prerequisites: To learn the importance and use of computer in design and manufacture

Course objectives: To provide an overview of how computers are being used in design, development of manufacturing plans and manufacture. To understand the need for integration of CAD and CAM

Course Outcomes:

CO1: Understand geometric transformation techniques in CAD.

CO2: Develop mathematical models to represent curves and surfaces.

CO3: Model engineering components using solid modeling techniques.

CO4: Develop programs for CNC to manufacture industrial components.

CO5: To understand the application of computers in various aspects of Manufacturing and Design

![NRCM Logo]

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SYLLABUS

UNIT - I

Fundamentals of CAD/ CAM, Application of computers for Design and Manufacturing, Benefits of CAD/ CAM - Computer peripherals for CAD/ CAM, Design workstation, Graphic terminal, CAD/ CAM software- definition of system software and application software, CAD/ CAM database and structure. **Geometric Modeling:** Wire frame modeling, wire frame entities, Interpolation and approximation of curves, Concept of parametric and non-parametric representation of curves, Curve fitting techniques, definitions of cubic spline, Bezier, and B-spline.

UNIT - II

Surface modeling: Algebraic and geometric form, Parametric space of surface, Blending functions, parametrization of surface patch, Subdividing, Cylindrical surface, Ruled surface, Surface of revolution Spherical surface, Composite surface, Bezier surface. B-spline surface, Regenerative surface and pathological conditions.

Solid Modelling: Definition of cell composition and spatial occupancy enumeration, Sweep representation, Constructive solid geometry, Boundary representations.

UNIT - III

NC Control Production Systems: Numerical control, Elements of NC system, NC part programming: Methods of NC part programming, manual part programming, Computer assisted part programming, Post Processor, Computerized part program, SPPL (A Simple Programming Language). CNC, DNC and Adaptive Control Systems.

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UNIT - IV

Group Technology: Part families, Parts classification and coding. Production flow analysis, Machine cell design.

Computer aided process planning: Difficulties in traditional process planning,Computer aidedprocess planning: retrieval type and generative type, Machinability data systems.

Computer aided manufacturing resource planning: Material resource planning, inputs to MRP, MRPoutput records, Benefits of MRP, Enterprise resource planning, Capacity requirements planning.

UNIT - V

Flexible manufacturing system: F.M.S equipment, FMS layouts, Analysis methods for FMS benefits of FMS.

Computer aided quality control: Automated inspection- Off-line, On-line, contact, Non-contact; Coordinate measuring machines, Machine vision.

Computer Integrated Manufacturing: CIM system, Benefits of CIM

TEXT BOOKS:

1. CAD/CAM Concepts and Applications / Alavala / PHI
2. CAD/CAM Principles and Applications / P. N. Rao / Mc Graw Hill

REFERENCE BOOKS:

1. CAD/CAM/ Groover M.P/ Pearson
2. CAD/CAM/CIM/ Radhakrishnan and Subramanian / New Age