

6 th Semester	RPR6C002	Computer Aided Design and Manufacturing (CAD /CAM)	L-T-P 3-0-0	3 Credits
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Module I: (06 hours)
Fundamentals of CAD: Design process, Applications of computer for design, Creating the Manufacturing Database, The Design workstation, Graphical Terminal, Operator input Devices, Plotters and other devices, Central Processing Unit, Memory types.

Module II: (12 hours)
Computer graphics Software and Database: Configuration, Graphics Packages, Constructing the Geometry, Transformations of geometry, Database structure and content, Wire frame versus solid modeling, Constraint– Based modeling, Geometric commands, Display control commands, Editing.

Module III: (10 hours)
Geometric Modeling: Types of Curves and Curve Manipulations, Types of Surfaces and Surface Manipulations, Solids: Introduction, Geometry and Topology, Solid Entities, Fundamentals of Solid Modeling, Boundary Representation (B-rep), Constructive Solid Geometry (CSG) – examples, Sweeps and Solid Manipulations Feature based Modeling: Introduction, Feature Entities, Parametrics, Feature Manipulations

Module IV: (08 hours)
CAM - Numerical Control and NC Part Programming: Numerical Control, Numerical Control elements, NC Coordinate system, NC motion control system, Manual and Computer Aided programming, the APT language, Miscellaneous Functions, M, Advanced part-programming methods.
Problems with conventional NC, NC technology: CNC, DNC, Combined DNC/ CNC system, Adaptive control manufacturing systems, Computer Integrated Manufacturing system, Machine Tools and related equipment, Materials Handling system: AGV, Robots, Lean manufacturing. Group Technology: Part Classification and coding, OPIZE and MICALSS code system.

Books:

- [1] CAD/CAM Computer Aided Design and Manufacturing, M.P.Goover and E.W.Zimmers, Jr., Pearson
- [2] CAD/CAM Theory and Practice, Zeid and Subramanian, TMH
- [3] CAD/CAM Principles, Practice and Manufacturing Management, McMahon and Browne, Pearson Education
- [4] CAD/CAM Concepts and Applications, C.R.Alavala, PHI
- [5] Computer Aided Design and Manufacturing, Lalit Narayan, Mallkarjuna Rao and Sarcar, PHI
- [6] CAD/CAM Theory and Conepts, K.Sareen and C.Grewal, S.Chand Publication
- [7] CAD/CAM/CAE, N.K.Chougule, Scitech
- [8] Principle of Interactive Computer Graphics, W.W.Newman, R.F.Sproull, TMH