

**COMPUTER AIDED DESIGN****Subject Code: 13ME2101****L P C**  
**4 0 3****Course Outcomes :**

At the end of the course, the student will be able to

CO1: Explain CAD system and wireframe modeling techniques

CO2: Describe different surface modeling techniques and surface manipulations

CO3: Discuss different solid modeling techniques and solid manipulations

CO4: Use various design applications of machine components

CO5: Appraise the collaborative engineering and translate different formats of CAD/CAM data exchange

**UNIT-I**

CAD system: Product life cycle, scope of CAD/CAM, modeling approaches, coordinate systems, basic features, datum features, modeling strategies, model viewing, layers

Wireframe modeling: wireframe entities, curve representation, analytic curve, parametric representation of synthetic curves, Hermite cubic spline, Bezier curve, B-spline curve, curve manipulation

**UNIT-II**

Surface modeling: Surface entities, surface representation, surface analysis, analytic surface, plane surface, ruled surface, surface of revolution, tabulated cylinder

Synthetic surfaces, Hermite Bi-cubic surface, Bezier surface, B-Spline surface, Coons surface, blending surface, offset surface, surface manipulations – displaying, segmentation, trimming, intersection, transformations

**UNIT III**

Solid modeling: Solid entities, geometry and topology, solid representation, Boundary representation (B-rep), Constructive Solid Geometry (CSG), sweep representation, solid manipulations

**UNIT-IV**

Design applications: Mechanical tolerances, mass properties on CAD system, assembly modelling, assembly tree, assembly planning, mating conditions, bottom-up assembly approach, top-down assembly approach, assembly analysis

**UNIT V**

Collaborative engineering: Distributed computing, virtual reality modelling languages, collaborative design, principles, approaches, tools, design systems.

CAD/CAM data exchange: Types of translators, IGES, STEP, ACIS, DXF, processors

**TEXT BOOKS:**

1. Ibrahim Zeid, “*Mastering CAD/CAM*”, 1e, McGraw Hill International, 2008

**REFERENCES:**

1. Ibrahim Zeid, “*CAD/CAM Theory and Practice*”, 5e, McGraw Hill International, 2009.
2. P N Rao, “*CAD/CAM*”, 2e, Tata McGraw Hill, 2010