Computer Aided Design

Introduction: The design process, elements of CAD; Principles of Software Design: Characteristics of good software, data structures, algorithm design, flow chart, coding, top-down programming, modular programming, structural coding, testing of the software. Computer Graphics: Graphics display, transformations, visualizations, computer animation.3D Modeling and Viewing: Coordinate systems, sketching and sketch planes; Modeling aids and tools; Layers, grids, clipping, arrays, editing. Curves Modeling: Analytical and synthetic curves, curve manipulations. Surface Modeling: Surface representation and surface analysis, analytical and synthetic surfaces, surface manipulations, NURBS.SOLID MODELING: Geometry and topology, solid entities, solid representation, fundamental of solid modeling, half spaces, boundary representation, constructive solid geometry, sweeps, solid manipulations. Features: Feature entities, feature representation, three dimensional sketching, parametrics, relations, constraints, feature manipulation. Mass properties: Geometric and mass properties evaluation, assembly modeling, product data exchange.

Suggested books:

1. Zeid I., "Mastering CAD/CAM", Tata McGraw Hill. 2007
2. OnwubikoC., "Foundation of Computer Aided Design", West Publishing Company. 1989
3. Hsu T. R. and Sinha D. K., "Computer Aided Design: An Integrated Approach", West Publishing Company. 1991
4. Dimarogonas, A. D., "Computer Aided Machine Design", Prentice Hall. 1988
5. Mortenson, M. E., "Geometric Modeling", 3rd Ed., Industrial Press. 2006