Computer Aided Design

Introduction: Product cycle and CAD; CAD Hardware; Display devices, Input/Output devices, Display processors, Hardware integration and networking; CAD Software

Computer Graphics: windowing and clipping algorithms, Bresenham's circle and ellipse generating algorithms

Curves and Surfaces: parametric representation of analytic and synthetic curves, curve manipulation techniques, parametric representation of analytic and synthetic surfaces, surface manipulation techniques

3D Modelling: Primitives; wire frame, boundary and solid models; constructive solid Geometry (CSG); applications

Database Techniques: Data structure, Database management, Graphics standards, Graphics database design, user interface.

Design and Analysis: Parametric design and programming. Animation and simulation, Mathematical modeling and methods of solution.

References:

1. CAD in Mechanical Engineering by V. Ramamurti - Tata McGraw Hill
2. Mathematical Elements for Computer Graphics by Rogers D.F. - McGraw Hill
3. Principles of CAD by J. Flooney and P. Steadman - Affiliated East West Press
4. CAD/CAM Theory & Practice by Ibrahim Zeid - McGraw Hill
5. Procedural Elements for Computer Graphics by Rogers and Adams - McGraw Hill