

## COMPUTER GRAPHICS

### UNIT-I:

**Introduction:** Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

**Output primitives :** Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

### UNIT-II:

**2-D geometrical transforms:** Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. (p.nos 204-227 of text book-1).

**2-D viewing:** The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen- Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm

### UNIT-III:

**3-D object representation:** Polygon surfaces, quadric surfaces, spline representation, Hermit curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

**3-D Geometric transformations:** Translation, rotation, scaling, reflection and shear transformations, composite transformations.

### UNIT-IV:

**3-D viewing:** Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping

**Visible surface detection methods:** Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods

### UNIT-V:

**Computer animation:** Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

### TEXTBOOKS:

1. Computer Graphics *C version*, Donald Hearn, M.Pauline Baker, Pearson
2. Computer Graphics Principles & practice, 2/e, Foley, VanDam, Feiner, Hughes, Pearson

**REFERENCEBOOKS:**

1. Computer Graphics, Donald Hearn and M.Pauline Baker, 2/E,PHI
2. Computer Graphics, Zhigand xiang, Roy Plastock, Schaum's outlines, 2/E, TMH
3. Procedural elements for Computer Graphics, David F Rogers, 2/e, TMH
4. Principles of Interactive Computer Graphics, Neuman , Sproul, TMH.
5. Principles of ComputerGraphics, Shalini Govil, Pai, 2005, Springer.