

**SARDAR PATEL UNIVERSITY**  
**B.Sc. Information Technology**  
**IV Semester**  
**Syllabus with Effect from: June-2012**  
**Course : US04EINT02**  
**( Computer Graphics )**

**Credits : 2**  
**Lectures per week : 2**  
**University Exam Duration : 2 Hours**

**All units carry equal weightage.**

**Unit : 1 - Introduction of Computer Graphics**

- A survey of major applications of Computer Graphics.
- Overview of different video display Devices: CRT, Raster scan, Color Monitors, DVST, Flat Panels.
- Input Devices: Keyboard, mouse, Trackball, Spaceball, Joystick, Data Glove, Digitizers, Image Scanner, Touch Panel, Light pen & Voice system.
- Hardcopy Devices: Printers and Plotters.
- Graphics Software & coordinate representation, Graphics functions, Software Standards.

**Unit : 2 - Output Primitives and their attributes**

- Output Primitives:
  - Points,
  - Lines,
  - Circles.
- Line Drawing Algorithms (without program): Digital Differential Analyzer (DDA) and Bresenham.
- Circle generating algorithm(without program): Midpoint Circle Algorithm
- Filled area primitives.
- Inside – Outside tests: Odd even rule & Non-zero winding number rule
- Boundary- fill algorithm (with procedure).
- Flood-Fill Algorithm (with procedure),
- Character generation.
- Attributes of output primitives.

**Unit : 3 - Two – dimensional Geometric Transformations and Viewing**

- 2-D geometric Transformations :
  - Translation,
  - Rotation,
  - Scaling,
  - Reflection &
  - Shear (with example).
- Viewing Pipeline,
- Window-to-Viewport transformation.

**Unit : 4 - Two – dimensional Clipping and logical classification of input devices**

- Point Clipping.
- Line clipping (without program).
- Cohen Sutherland line clipping algorithm.
- Polygon Clipping(without program).
- Sutherland Hodgeman polygon clipping algorithm.
- Text clipping and Exterior clipping.
- Logical classification of input devices.
- Input modes (request, sample & event mode – Definitions).

**MAIN REFERENCE BOOKS :**

1. Computer Graphics by Donald Hearn & M. Pauline Baker, PHI, 1995