

BSc (IT)

Graphics and animation (LTP::4:0:2)

6 Credits

UNIT-1

Introduction – applications of computer graphics, operations, graphics software packages. Graphical input – output devices, raster scan video principles- raster scan monitors, color raster scan systems, plasma panel display, LCD panels, hard copy raster devices. Random scan devices- monitor tube displays, plotters. Scan conversion – scan conversion methods, polynomial method for line, polynomial method for circle, DDA algorithm for line, circle and ellipse, Bresenham’s algorithm for drawing line and circle. Midpoint methods for drawing line and circle, problems of scan conversion.

UNIT-2

Scan conversion for solids- solid areas or polygons, inside-outside test – odd even method, winding number method. Solid area filling algorithms- boundary fill algorithm, scan line fill algorithm, scan line seed fill algorithm, ordered edge list algorithm. 2D geometrical transformations – basic transformations- translation, rotation, scaling, homogeneous co-ordinate system – transformations in homogeneous notation, inverse of basic transformations, scaling about a reference point, rotation about an arbitrary point. Other transformations – reflection about any arbitrary line, shearing, combined transformation- computational efficiency, visual reality, inverse of combined transformations. 3D geometrical transformations- basic 3D transformation- 3D translation, 3D scaling. 3D rotation, rotation about an arbitrary axis in space, other 3D transformations- 3D reflection, reflection about any arbitrary plane, 3D shearing.

UNIT-3

Projection – introduction, parallel projection- orthographic projection, axonometric projection, oblique projection, perspective projection – standard perspective projection, vanishing points. Image formation inside a camera. 2D viewing and clipping- windows and viewports, viewing transformation, clipping of lines in 2D- Cohen - Sutherland clipping algorithm, midpoint subdivision method, polygon clipping – Sutherland – Hogman polygon clipping. Curve design – classical techniques for designing curves and object surfaces, modern curve representations.

UNIT – 4

Multimedia : Definition, CD-ROM and the multimedia highway, Uses of Multimedia, Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills . Multimedia building blocks: SOUND: MIDI, Digital audio, audio file formats. Images: still images, color and file formats. ANIMATION: principles of animation, making animation. VIDEO: using video, how video works, and video standards.

Text Books:

1. Computer Graphics, Multimedia and Animation by Malay K Pakhira
2. Computer Graphics, Donald Hearn, M. Pauline Baker, Prentice-Hall
3. Computer Graphics, Roy A. Plastock, Gordon Kalley, Schaum’s Outlines, McGraw Hill
4. . Tay Vaughan “Multimedia – making it work”, TMH publication.