Paper Code : CMG 503

Paper Name : Computer Graphics

Teaching Hours (Per Week)		Examination Scheme		
TH. (hours)	Pr. (hours)	Internal	External	Total
		Th. (marks)	Th. (marks)	100 (marks)
4		30	70	

Lectures = 68 Hours

UNIT 1.: (10 Hours)

What is Computer Graphics? Applications of computer graphics.

Display devices: Random scan and Raster scan systems, color CRT, Plasma panel displays, LCD Panels.

Graphics Input Devices: Keyboard, Mouse, Trackball, Joystick, Data Glove, Digitizer, Scanner, Touch panels, Light pen, Plotter, Film Recorders, Voice System, Display processors, Graphics tablet.

UNIT 2: (15 Hours)

Points and Lines, Digital Differential Analyzer (DDA) and Bresenham's line drawing algorithm, Circle Generating Algorithms, Midpoint circle and DDA circle algorithm, line attributes, color and Grayscale levels.

Polygon Filling: Scan Line Polygon Filling algorithm, Flood-Fill algorithm, Antialiasing.

Windows and Clipping: Concept of a window, viewport, window to viewport transformation.

Line clipping: Cohen-Sutherland line clipping, Liang-Barsky line clipping.

Polygon clipping: Sutherland-Hodgman and Weiler-Atherton polygon clipping Algorithms.

UNIT 3: (15 Hours)

2D Transformation: Basic transformations, Homogeneous Co-ordinates, Composite transformations, translation, rotation and scaling, reflection, shearing, Rotation about an arbitrary point, Zooming and panning, Rubber band methods, Dragging.

UNIT 4: (13 Hours)

Polygon surfaces, polygon tables, plane equations, polygon meshes, curved lines and surfaces, Blobby objects, Cubic Spline curves, Bezier curves, B-spline curves.

UNIT 5: **(15 Hours)**

Three dimensional co-ordinate systems, Three dimensional transformations: translation, rotation and scaling, Three dimensional display methods: Parallel projection (mathematical expression), perspective projection(mathematical expression), depth cueing, visible line and surface identification, surface rendering,exploded and cutaway views, three dimensional and stereoscopic views.

Visible Surface Detection: Classification, Back Face Detection method, Depth Buffer method, Scan line method.

TEXT BOOK:

1. D Hearn and Baker M P, ***Computer Graphics***.1996. Prentice Hall of India pvt.ltd.
2. Rogers & Adams, "***Mathematical Elements for Computer Graphics***", McGraw Hill, 1989.

REFERENCE BOOKS:

1. W M Newman &Sproul R F, ***Principles of Interactive Computer Graphics***
2. Harrington Steven, ***Computer Graphics***- ***A Programmers approach***
3. J D Foley and A Van Dam, ***Fundamentals of interactive Computer Graphics***