## MCA-301



## Vardhman Mahaveer Open University, Kota

## **Computer Graphics**

## <u>Contents</u>

Unit No.	Unit	Pages
Unit-1	Introduction to Computer Graphics:	1-19
	Introduction, Survey on Computer Graphics, Graphics API, Application Areas of	
	Computer Graphics.	
Unit-2	Computer Graphics Systems:	20-50
	Introduction, Display Devices, Direct View Storage Tube, Calligraphic or	
	Random Scan Display System, Raster Scan Display System.	
Unit-3	Color CRT Monitors:	51-68
	Introduction, CRT monitor, Color CRT Monitor, Various color monitors.	
Unit-4	Output and Input Devices:	69-92
	Introduction, Various Input devices, Various Output devices, Graphical Input	
	Techniques.	
Unit-5	Output Primitives:	93-127
	Introduction, Scan Converting Lines, Scan Converting Circle, Scan Converting	
	Ellipse.	
Unit-6	Color Filling Algorithm:	128-147
	Introduction, Filled-Area Primitives, Scan Line Polygon fill Algorithm Inside-	
	Outside Tests, Seed Fill Algorithm.	
Unit-7	Attributes of Output Primitives:	148-169
	Introduction, Line Attributes, Curve Attributes, Character Attributes, Antialiasing.	
Unit-8	Curves and Surfaces:	170-184
	Introduction, Spline Representation, Cubic Spline, Beizer Curves, B-Spline	
	Curves, Quadric Surfaces, Beizer Surfaces.	
Unit-9	Geometric 2D Transformation:	185-204
	Introduction, Basic 2-D transformation, Homogeneous coordinate system, Other	
	Transformation, Composite transformation, Commutivity of Transformation.	

Unit-10	Geometric 3D Transformation:	205-224
	Introduction, Basic 3-D transformation, Other Transformation, Composite	
	transformation, Commutivity of Transformation.	
Unit-11	Viewing Transformation:	225-240
	Introduction, Coordinate systems, Window to Viewport Transformation, Viewing	
	in 3D, Perspective Projection, Parallel Projection, View Volumes.	
Unit-12	Clipping:	241-258
	Introduction, Point Clipping, Line Clipping, Polygon Clipping.	
Unit-13	Visible Surface Detection:	259-278
	Introduction, Visible Surface Detection Methods, Backface Culling(Removal),	
	Depth-Buffer(Z-Buffer) Algorithm, Scanline Algorithm, Depth Soring	
	Algorithm(Painter's Algorithm), Area Subdivision Algorithm. BSP(Binary Space	
	Partition) Trees Algorithm, Ray Casting.	
Unit-14	Illumination model and Shading:	279-297
	Introduction, Ambient Reflection, Diffuse Reflection, Specular Reflection and	
	Phong Model, Gouraud Shading, Phong Shading, Ray Tracing.	
Unit-15	Color Models and Applications:	298-308
	Introduction, Color Models, RGB Color Model, CMY Color Model, YIQ Color	
	Model, HSV Color Model, Color Section and applications.	
Unit-16	Computer Animation:	309-334
	Introduction, Design of Animation Sequences, General Computer-Animation	
	Functions, Raster Animations, Computer-Animation Languages, Various	
	Animation Tools.	
Unit-17	Graphical User Interfaces and Input Methods :	335-354
	Introduction, The User Dialogue Windows and Icons, Input of Graphical Data	
	Logical Classification of Input Devices, Input Functions and Input Modes, Initial	
	Values Parameters.	