

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE III Year (Computer Engineering) (Full Time)			
Subject Code & Name	Instructions Hours per Week			Credits			
	L	T	P	L	T	P	Total
CER6C1 Computer Graphics							
Duration of Theory Paper: 3 Hours	3	1	-	3	1	-	4

Course Objectives: The goal of this course is to provide an introduction to the theory and practice of computer Graphics.

Prerequisite(s): Programming language: C++/JAVA

COURSE OF CONTENTS

Unit I

Introduction: Application of Computer Graphics, Raster Graphics Fundamentals: Scan conversion, Pixel, Frame Buffer. Graphics Primitives; Line algorithms Circle algorithms, Ellipse, Character generation, Polygon Representation, inside test, Polygon filling algorithms, Antialiasing.

Unit II

Display devices: Random scan and Raster scan monitors, Colors CRT monitor, Plasma Panel; **Hard Copy devices:** Printers and Plotters; **Input devices:** Joysticks, Mouse, Digitizer, Scanner, and Camera; Input Techniques;

Unit III

Windowing and clipping: 2D Transformation, Raster method of Transformation, Window, View port, Viewing, Window to View port Transformation, Line clipping algorithms, Polygon clipping algorithms.

Unit IV

Three Dimensions: 3D Modeling techniques, 3D Display Techniques, 3D Transformation, Viewing Parameters, Hidden Surface and back face removal algorithms. 3D Curves & Surfaces: Bezier, Bspline.

Unit V

Shading and Color Models: Diffuse illumination, Point source illumination, Reflection, Refraction, Transparency, Shadows, Polygon rendering algorithms, Dithering, Half toning, Color Models and applications.

BOOKS RECOMMENDED

- [1] Hearn Donald and Baker M. Pauling, *Computer Graphics*, 2/e, Prentice Hall of India.
- [2] Hearn Donald and Baker M. Pauling, *Computer Graphics with OpenGL*, 3/e, Prentice Hall, 2004.
- [3] David F. Rogers, *Procedural Element of computer Graphics*, McGraw Hill International.
- [4] William M. Newman Robert F. Sproull, *Principles of Interactive Computer Graphics*, McGraw

Hill.

- [5] J.D. Foley, A. van Dam, S.K. Feiner, J.F. Hughes, and R.L. Philips, *Introduction to ComputerGraphics*, Addison-Wesley, 1994.
- [6] Zhigang Xiang and Roy Plastock, *Computer Graphics*, Tata McGraw Hill Publications.