

Devi Ahilya University, Indore, India Institute of Engineering & Technology			MSc – I Year (Applied Mathematics) with Specialization in Computing & Informatics Semester- II				
Subject Code & Name	Instructions Hours per Week			Credits			
AM2EC2: Comp. Graphics / Multimedia	L	T	P	L	T	P	Total
	3	1	-	3	1	-	4
Duration of Theory Paper: 3 Hours							

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

Prerequisites: Programming language: C++/JAVA.

COURSE OF CONTENTS

UNIT I

Introduction to Computer Graphics, Application of Graphics, Display Devices: Refresh Cathode - Ray Tubes, Raster Scan Displays, Random Scan Displays, Color CRT Monitors, Flat Panel Displays. Video cards/display cards Input Devices: Mouse, Trackball, Space ball, Data Glove, Joystick, Light pen, Scanner, Digital Camera, Touch Panels, Voice Systems. Hardcopy Devices: Printers and Plotters

UNIT II

Creation of two dimensional objects and applying simple transformations like Translation, Scaling, Rotation and applying Composite transformations. Graphics Primitives Algorithms for line, polygon and circle. Creation of simple three dimensional objects like cube, cone and cylinder and applying simple transformations like Translation, Scaling, Rotation, Composite transformations, projections –Parallel, Perspective.

UNIT III

Clipping: Clipping operations, Point clipping, Line clipping: Cohen Sutherland Algorithm, Liang Barsky Algorithm, Nicholl-Lee-Nicholl Algorithm. Polygon clipping: Sutherland- Hodgeman Algorithm, Weiler Atherton Algorithm. Text clipping, Exterior clipping.

UNIT IV

Finding out visible surfaces and removal of hidden surfaces in simple objects using object space and image space algorithms, Image enhancement, Image transformation from color to gray scale and vice versa, Image manipulation and Image optimization for web - Usage of editing tools, layers, filters, special effects and color modes. Creation of simple Gif animated images with textual illustrations, Image Compression.

UNIT V

Color Models and Color Application: Color models: Properties of Light. Standard Primaries and the Chromaticity Diagram, XYZ Color Model, CIE Chromaticity Diagram. RGB Color Model, YIQ Color Model, CMY Color Model, HSV Color Model. Conversion between HSV and RGB Models. HLS Color Model, Color Selection and Application. Advancements in the technology in Computer Graphics.

BOOKS RECOMMENDED:

- [1] A.P.Godse, D.A.Godse, Computer Graphics and Multimedia, Technical Publications, 2009.
- [2] Donald Hearn and M. Pauline Baker, Computer Graphics, Second Edition, Prentice Hall of India, 1996.
- [3] David F. Rogers, Procedural Element of computer Graphics, McGraw Hill International, 1985.

- [4] William M. Newman Robert F. Sproull, Principles of Interactive Computer Graphics, McGraw Hill, 1979.
- [5] D. Foley, A. van Dam, S.K. Feiner, J.F. Hughes, and R.L. Philips, Introduction to Computer Graphics, Addison-Wesley, 1994.
- [6] D. P. Mukherjee, Fundamentals Of Computer Graphics And Multimedia, PHI, 2004.