

## **CS8092 COMPUTER GRAPHICS AND MULTIMEDIA**

### DETAILED SYLLABUS

#### **UNIT I ILLUMINATION AND COLOR MODELS**

Light sources - basic illumination models – halftone patterns and dithering techniques; Properties of light - Standard primaries and chromaticity diagram; Intuitive colour concepts - RGB colour model - YIQ colour model - CMY colour model - HSV colour model - HLS colour model; Colour selection. Output primitives – points and lines, line drawing algorithms, loading the frame buffer, line function; circle and ellipse generating algorithms; Pixel addressing and object geometry, filled area primitives.

#### **UNIT II TWO-DIMENSIONAL GRAPHICS**

Two dimensional geometric transformations – Matrix representations and homogeneous coordinates, composite transformations; Two-dimensional viewing – viewing pipeline, viewing coordinate reference frame; window-to-viewport coordinate transformation, two-dimensional viewing functions; clipping operations – point, line, and polygon clipping algorithms.

#### **UNIT III THREE-DIMENSIONAL GRAPHICS**

Three dimensional concepts; Three-dimensional object representations – Polygon surfaces- Polygon tables- Plane equations - Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations – Bezier curves and surfaces -B-Spline curves and surfaces. TRANSFORMATION AND VIEWING: Three dimensional geometric and modelling transformations – Translation, Rotation, Scaling, composite transformations; Three-dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods.

#### **UNIT IV MULTIMEDIA SYSTEM DESIGN & MULTIMEDIA FILE HANDLING**

Multimedia basics – Multimedia applications – Multimedia system architecture – Evolving technologies for multimedia – Defining objects for multimedia systems – Multimedia data interface standards – Multimedia databases. Compression and decompression – Data and file format standards – Multimedia I/O technologies – Digital voice and audio – Video image and animation – Full motion video – Storage and retrieval technologies.

#### **UNIT V HYPERMEDIA**

Multimedia authoring and user interface - Hypermedia messaging -Mobile messaging – Hypermedia message component – Creating hypermedia message – Integrated multimedia message standards – Integrated document management – Distributed multimedia systems. CASE STUDY: BLENDER GRAPHICS Blender Fundamentals – Drawing Basic Shapes – Modelling – Shading & Textures

#### **OBJECTIVES:**

- To develop an understanding and awareness how issues such as content, information architecture, motion, sound, design, and technology merge to form effective and compelling interactive experiences for a wide range of audiences and end users.

- To become familiar with various software programs used in the creation and implementation of multi- media
- To appreciate the importance of technical ability and creativity within design practice.
- To gain knowledge about graphics hardware devices and software used.
- To understand the two-dimensional graphics and their transformations.
- To understand the three-dimensional graphics and their transformations.
- To appreciate illumination and color models
- To become familiar with understand clipping techniques
- To become familiar with Blender Graphics

**TEXT BOOKS:**

1. Donald Hearn and Pauline Baker M, —Computer Graphics", Prentice Hall, New Delhi, 2007 [ UNIT I – III]
2. Andleigh, P. K and Kiran Thakrar, —Multimedia Systems and Designll, PHI, 2003. [ UNIT IV, V]

**REFERENCES:**

1. Judith Jeffcoate, —Multimedia in practice: Technology and Applicationsll, PHI, 1998.
2. Foley, Vandam, Feiner and Hughes, —Computer Graphics: Principles and Practicell, 2nd Edition, Pearson Education, 2003.
3. Jeffrey McConnell, —Computer Graphics: Theory into Practicell, Jones and Bartlett Publishers,2006.
4. Hill F S Jr., "Computer Graphics", Maxwell Macmillan, 1990.
5. Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Reinhard, KelvinSung, and AK Peters, —Fundamentals of Computer Graphicsll, CRC Press, 2010.
6. William M. Newman and Robert F. Sproull, —Principles of Interactive Computer Graphicsll, Mc Graw Hill 1978.

<https://www.blender.org/support/tutorials/>