

Course: B. Tech.	Year:			
Course Title: Computer Graphics	Course Code: ETUCCS601T/P			
Semester: VI	L	T	P	C
	3	0	2	4

Course 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.

Unit	Content	Hours
1	Introduction: Light sources, basic illumination models, halftone patterns and dithering techniques, raster-scan systems, random scan systems, graphics monitors and work stations and input devices, Output primitives: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms	8
2	Two-dimensional graphics: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. 2DViewing: Clipping: Point, Line, Polygon, Curve and Text. Cohen Sutherland Line Clipping Algorithm, Sutherland-Hodgeman Polygon Clipping Algorithm.	8
3	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.	8
4	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.	8
5	Computer Animation: Introduction, Working in Flash, Drawing with Flash, Basic animation, Working in the timeline, Working with symbols, Shape tween, staggering animation effect, Animation Review, Break apart and distribute, Intro to Motion Guide, Motion Guide Paths, Mask layers, Button Intro, Intro to scripting	8

List of Experiments:

1. To implement Line, Circle and ellipse Attributes
2. To implement line drawing algorithms DDA line algorithm, Bresenham's line algorithm

3. To perform 2D and 3D transformations
4. To perform animation using any Animation software (Create Frame by Frame Animations using multimedia authoring tools.
5. To perform basic operations on image using any image editing software
6. To develop a presentation for a product using techniques like Guide Layer, masking and onion Skin using authoring tools.
7. To create a Jpeg image that demonstrates the various features of an image editing tool.

Outcome:

- CO1** Design two dimensional graphics.
- CO2** Apply two dimensional transformations.
- CO3** Design three dimensional graphics.
- CO4** Apply three dimensional transformations.
- CO5** Apply Illumination and color models.

Text Books:

1. Donald Hearn and Pauline Baker M, —Computer Graphics", Prentice Hall, New Delhi, 2007.
2. Andleigh, P. K and Kiran Thakrar, —Multimedia Systems and Designl, PHI, 2003.