

# GUJARAT TECHNOLOGICAL UNIVERSITY

## DIPLOMA IN COMPUTER ENGINEERING

### SEMESTER- VI

Subject Name: **COMPUTER GRAPHICS AND MULTIMEDIA**

Sr. No.	Subject content	Hrs.
1	<b>Introduction to Computer Graphics</b> 1.1 History of Computer Graphics 1.2 Graphics standard 1.3 Application of Computer Graphics	2
2	<b>Output Primitives</b> 2.1 Line drawing Algorithm 2.1.1 Simple Line Drawing Algorithm 2.1.2 DDA algorithm 2.1.2 Bresenham's Line Algorithm 2.1.3 Parallel Line Algorithm 2.2 Circle Drawing Algorithm 2.2.1 Mid-point circle algorithm 2.3 Filled Area Primitives 2.3.1 Scan Line polygon fill algorithm 2.3.2 Boundary Fill algorithm 2.3.3 Flood fill Algorithm	6
3	<b>2D Geometry</b> 3.1 Basic Transformations 3.1.1 Translation 3.1.2 Rotation 3.1.3 Scaling 3.2 Matrix Representations and Homogeneous Co-ordinates 3.3 Composite Transformations 3.3.1 Translation 3.3.2 Rotations 3.3.3 Scaling 3.4 Other Transformation 3.4.1 Reflection 3.4.2 Zooming 3.4.3 Shear	6

<b>4</b>	<b>2D Viewing</b> 4.1 Viewing Pipeline 4.2 Windows to Viewpoint co-ordinate transformation 4.3 Clipping Operations 4.4 Point Clipping 4.5 Line Clipping 4.5.1 Cohen Sutherland Line Clipping 4.6 Polygon Clipping 4.6.1 Sutherland Hodgeman Polygon Clipping 4.7 Translation 4.8 Rotation 4.8.1 Coordinate Axes Rotation 4.8.2 General Three Dimensional Rotations 4.9 Scaling 4.10 Projection 4.10.1 Parallel projection 4.10.2 Perspective projection	<b>10</b>
<b>5</b>	<b>Multimedia</b> 5.1 Introduction to multimedia 5.1.1 Multimedia ,Hypertext, Hypermedia 5.1.2 Application of Multimedia in various fields 5.1.2.1 Education 5.1.2.2 Media 5.1.2.3 Home 5.1.2.4 Marketing etc. 5.2 Storage medium, 5.3 Representation medium, 5.4 Transmission medium, 5.5 Independent media, 5.6 Combination of media, 5.7 Integration, data characteristics, 5.8 Transmission types i.e. asynchronous, synchronous	<b>4</b>
<b>6</b>	<b>Sound / Audio ,Video &amp; Animation</b> 6.1 Basic concept of sound 6.2 Computer Representation of sound 6.3 Audio formats 6.3.1 MIDI concept 6.3.2 WAVE,MP3 ,MP4 6.4 Concept of Images 6.4.1 Image types – captured images and stored images 6.4.2 Image formats - .JPEG,.BMP ,.GIF 6.5 Concept of Video 6.5.1 Video formats 6.6 Concept of Animation 6.6.1 Computer based animations 6.6.2 Animation languages.	<b>9</b>

<b>7</b>	<b>Data compression techniques</b> 7.1 Storage requirements for Audio/ Video 7.2 Data compression techniques 7.2.1 Run Length 7.2.2 Arithmetic 7.2.3 Huffman 7.3 JPEG standard (Image encoding) 7.4 MPEG standard (Audio/Video encoding)	<b>5</b>
	<b>Total</b>	<b>42</b>

## LABORATORY EXPERIENCES

**Hrs.**

1. Draw line using different line style	4
2. Draw the circle using Brezenham algorithm	2
3. Perform the operation of scaling for two dimension picture	2
4. Perform the operation of translation for two dimensional picture	2
5. Perform the operation of rotation for 2-D picture	2
6. Perform the operation of shear transformation for 2-D picture	2
7. Perform the operation of windowing and clipping technique	4
8. To study about the computer representation of Audio.	2
9. To study about the Audio\ Video file formats	2
10. To study about the Image file formats	2
11. To study about the data compression techniques	2
12. Develop Animation movie using flash.	2
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Total	28

## Reference Books:

1. Computer Graphics	Donald Hearn & M Paulin Baker PHI
2. Computer Graphics	Steven Harington MGH
3. Multimedia	Parekh- TMH
4. Multimedia Computing and Applications	Ralf Steinmetz (Pearson)
5. Multimedia and Computer Graphics	D.P.Mukharjee