



Department of Information Technology		LP : IT16501 Rev. No: 00
B.E/B.Tech/M.E/M.Tech: IT	Regulation: 2016	Date: 30-06-2018
PG Specialisation : --		
Sub. Code / Sub. Name : IT16501 / Graphics and Multimedia		
Unit : I		

**Unit Syllabus: INTRODUCTION**

Overview of graphics systems – Raster scan, Random scans, Output primitives – 2D concepts- Points and Lines, Line drawing algorithms, Circle and Ellipse generating algorithms.

**Objective:**

Students will acquire knowledge about algorithm for displaying two dimensional output primitives for raster graphics system.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Overview of graphics systems – Raster scan, Random scans	1- Ch 2; Pg.60-62	LCD
2	Output Primitives- 2D Concepts Points and Lines	1- Ch 3; Pg.104-106	LCD
3	Line Drawing Algorithms DDA Algorithm	1- Ch 3; Pg.106-108	BB/LCD
4	Bresenham's Line Algorithm	1- Ch 3; Pg.108-112	BB/LCD
5	Parallel Line Algorithms, Loading the frame buffer, Line Function	1- Ch 3; Pg.112-117	BB/LCD
6	Circle Generating Algorithms – Properties of Circles	1- Ch 3; Pg.117-118	BB/LCD
7	Midpoint Circle Algorithm	1- Ch 3; Pg.118-122	BB/LCD
8	Circle Generating Algorithms – Properties of Ellipses	1- Ch 3; Pg.122-123	BB/LCD
9	Midpoint Ellipse Algorithm	1- Ch 3; Pg.123-130	BB/LCD
<b>Content beyond syllabus covered (if any):</b> Loading the frame buffer, line Function			

\* Session duration: 50 minutes



Sub. Code / Sub. Name: IT16501 / Graphics and Multimedia

Unit : II

**Unit Syllabus : TWO DIMENSIONAL TRANSFORMATION AND VIEWING**

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, Clipping operations- Point, Line, Polygon, Curve and Text clipping.

**Objective:** Students will acquire knowledge two dimensional transformations and viewing.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Two dimensional geometric transformations – Translation, Rotation, Scaling	1- Ch 5; Pg.204-208	BB/LCD
11	Matrix representations and Homogeneous Coordinates	1- Ch 5; Pg.208-210 4 - Ch 10; Pg.224-230	BB/LCD
12	Composite transformations – Translations, Rotations, Scaling, Pivot-Point Rotation, Fixed Point Scaling, Scaling Directions	1- Ch 5; Pg.211-220 4 - Ch 10; Pg.233-234	BB/LCD
13	Two dimensional viewing – The Viewing Pipeline	1- Ch 6; Pg.236-239	BB/LCD
14	Viewing Coordinate Reference Frame, Window-to-Viewport coordinate transformation	1- Ch 6; Pg.239-242	BB/LCD
15	Clipping Operations – Point Clipping, Line Clipping- Cohen-Sutherland, Liang-Barsky Line Clipping	1- Ch 6; Pg.244-252	BB/LCD
16	Nicholl-Lee-Nichol Line Clipping, Line Clipping using Nonrectangular clip windows	1- Ch 6; Pg.253-257	BB/LCD
17	Polygon Clipping – Sutherland-Hodgeman, Weiler-Atherton Polygon Clipping	1- Ch 6; Pg.257-263	BB/LCD
18	Curve Clipping, Text Clipping	1- Ch 6; Pg.264-265	BB/LCD

**Content beyond syllabus covered (if any):**

\* Session duration: 50 mins



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Unit : III

**Unit Syllabus :**

**THREE DIMENSIONAL TRANSFORMATION AND VIEWING**

Three dimensional concepts; Three dimensional object representations – Polygon surfaces- Polygon tables- Plane equations – Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects, Splines. Three dimensional geometric and modeling transformations – Translation, Rotation, Scaling, composite transformations, Three dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping. Color Models – RGB, YIQ, CMY, HSV.

**Objective:** Students will acquire knowledge three dimensional transformations and viewing.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Three dimensional concepts – Parallel Projection, Perspective Projection, Depth Cueing, Surface Rendering, Cutaway views, Stereographic views	1- Ch 9; Pg.316-323	BB/LCD
20	Three dimensional object representations- Polygon surfaces, Polygon tables, Plane equations, Polygon meshes	1- Ch 10; Pg.325-330	BB/LCD
21	Curved Lines and Surfaces, Quadratic Surfaces- Sphere, Ellipsoid, Torus	1- Ch 10; Pg.330-332	BB/LCD
22	Blobby Objects, Splines	1- Ch 10; Pg.334-340	BB/LCD
23	Three dimensional geometric and modeling transformations – Translation, Rotation, Scaling	1- Ch 11; Pg.428-442	BB/LCD
24	Composite Transformations	1- Ch 11; Pg.443-445	BB/LCD
25	Three dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping	1- Ch 12; Pg.452-482	BB/LCD
26	Color Models – RGB, YIQ	1- Ch 15; Pg.592-594 4 -Ch 28 ; Pg.772-774	BB/LCD
27	Color Models – CMY, HSV	1- Ch 15; Pg.594-597 4 -Ch 28; Pg.774-775	BB/LCD

**Content beyond syllabus covered (if any):**

\* Session duration: 50 mins



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Unit : IV

**Unit Syllabus : MULTIMEDIA BASICS**

Introduction: Definition, application, elements, Text, Image, Audio, Video –types, representations, standards, file formats.

**Objective:** Students will learn about basics and elements of Multimedia and various file formats.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Introduction- Definition, Applications-Home, Educational, Industrial Training, Information Kiosks, Corporate, Business, Tourism and Travel, Electronic, Medicine, Engineering	2- Ch 1; Pg.1,9-13 6 – Ch 1; Pg.3-4	LCD
29	Elements Text-Types, Representation	2- Ch 4; Pg.77-81	LCD
30	Text - Standard, File Formats	2- Ch 4; Pg.81-87	LCD
31	Image-Types	2- Ch 5; Pg.91-93 6 - Ch 3; Pg.60-64	LCD
32	Image-Standards, File Formats	2- Ch 5; Pg.109-111,130-132 6 - Ch 3; Pg.71-77	LCD
33	Audio-Types	2- Ch 7; Pg.178-183	LCD
34	Audio- File Formats	2- Ch 7; Pg.235-247	LCD
35	Video-Types	2- Ch 8; Pg.289-292 6 - Ch 5; Pg.112-113	LCD
36	Video- File Formats	2- Ch 8; Pg.320-329	LCD

**Content beyond syllabus covered (if any):**

\* Session duration: 50 mins



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Unit :V

**Unit Syllabus : MULTIMEDIA DEVELOPMENT**

Software Life cycle, Addie Model, Conceptualization, Content collection and processing, flow line, script, storyboard, implementation, Authoring metaphors, Testing and feedback, final delivery, Case Study: study of CBT on sound in multimedia.

**Objective:** Students will learn about developing multimedia applications.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Software Life Cycle Overview – Feasibility Study, Requirement Analysis, Project Planning, Designing, Implementation, Integration, Delivery and Maintenance	2- Ch 15; Pg.652-654	LCD
38	ADDIE Model	2- Ch 15; Pg.654-655	LCD
39	Conceptualization- Subject Matter, Target Audience, Objectives	2- Ch 15; Pg.655-656	LCD
40	Content Collection and Processing, Story, Flow Line	2- Ch 15; Pg.656-658	LCD
41	Script-Guidelines for Text based, Audio, Interactivity, Learner control, Feedback	2- Ch 15; Pg.658-662	LCD
42	Storyboard-Guidelines, Implementation-Hardware, Software	2- Ch 15; Pg.662-667	LCD
43	Authoring Metaphors-Slide Show, Book, Windowing, Timeline, Network, Icon Metaphor	2- Ch 15; Pg.667-669	LCD
44	Testing and Feedback, Final Delivery	2- Ch 15; Pg.669-670	LCD
45	Case Study - Study of CBT on sound in multimedia, Computer Games	2- Ch 15; Pg.671-684	LCD
<b>Content beyond syllabus covered (if any):</b> Computer Games			

\* Session duration: 50 mins



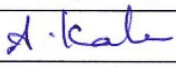
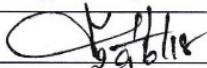
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**TEXT BOOKS:**

1. Donald Hearn, M.Pauline Baker, —Computer Graphics, PHI, 2014.
2. Ranjan Parekh, —Principles of Multimedia, Second Edition, Mcgraw Hill, 2012.

**REFERENCES:**

3. F .S. Hill, —Computer Graphics using OPENGL||, Second edition, Pearson Education 2014.
4. John F. Hughes , Andries van Dam, Morgan McGuire , David F. Sklar, James D. Foley , Steven K. Feiner , Kurt Akeley , —Computer Graphics: Principles and Practice||, 3rd Edition, Addison Welsey Professional, 2013.
5. Prabhat K Andleigh, Kiran Thakrar, —Multimedia systems design||, First Edition, PHI, 2015.
6. Ze-Nian Li and Mark S.Drew, —Fundamentals of Multimedia||, First Edition, Pearson Education, 2007

	Prepared by	Approved by
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Date	29-06-2018	29-06-2018
Remarks *:		
Remarks *:		

\* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD