18CSPE706	**COMPUTER GRAPHICS AND MULTIMEDIA**	**L**	**T**	**P**	**C**
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Course Objectives:

1.	To understand and design two-dimensional graphics.
2.	To understand and apply two dimensional transformations.
3.	To design three dimensional graphics and apply three dimensional transformations.
4.	To be familiar with various software programs used in the creation and implementation of multi-media (interactive, motion/animation, presentation, etc.).
5.	To be familiar with hypermedia messaging and distributed multimedia systems.

UNIT I	**INTRODUCTION**	**9**	**+**	**0**

Survey of computer graphics - Video display devices, Raster scan systems - Random scan systems, Graphics monitors and Workstations - Graphics Software.
Output Primitives: Points and Lines - Line Drawing Algorithms (DDA Algorithm, Bresenham's Line Algorithm), Circle generating algorithms.

UNIT II	**TWO DIMENSIONAL GRAPHICS**	**9**	**+**	**0**

Basic Transformations - Matrix representations and homogeneous coordinates - Composite Transformations- Other Transformations- The viewing pipeline - Viewing coordinate reference frame - Window-to-viewport coordinate transformation.
Clipping: Clipping operations - Point clipping - Line clipping (Cohen Sutherland algorithm, Liang Barsky algorithm) - Polygon Clipping (Sutherland-Hodgeman Algorithm) - Curve Clipping - Text Clipping.

UNIT III	**THREE DIMENSIONAL GRAPHICS**	**9**	**+**	**0**

Three Dimensional Object Representations: Polygon surfaces - Quadric surface - Spline representation - Bezier Curves and surfaces - B-spline curve and surfaces.
Three dimensional Geometric and Modeling Transformations: Translation – Rotation – Scaling - Composite Transformation. Three Dimensional viewing: Viewing Pipeline - Viewing Coordinates -Projections (Parallel and Perspective).

UNIT IV	**MULTIMEDIA SYSTEM DESIGN AND MULTIMEDIA FILE HANDLING**	**9**	**+**	**0**

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**	**9**	**+**	**0**

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.

Total (L+T)= 45 Periods

Course Outcomes:
Upon completion of this course, the students will be able to:

CO1	:	Design two dimensional graphics.
CO2	:	Apply two dimensional transformation
CO3	:	Design and apply three dimensional graphics and transformations.
CO4	:	Design various software programs used in the creation and implementation of multi-media (interactive, motion/animation, presentation, etc.).
CO5	:	Design hypermedia messaging and distributed multimedia systems.

Text Book:

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 Design", PHI, 2003.(Unit IV & V)

Reference Books:

1.	John F. Hughes, Andries Van Dam, Morgan McGuire, David F. Sklar, James D. Foley, Steven K. Feiner and Kurt Akeley, "Computer Graphics: Principles and Practice", , 3rd Edition, Addison Wesley Professional,2013.
2.	Donald Hearn and M. Pauline Baker, Warren Carithers, "Computer Graphics With Open GL", 4th Edition, Pearson Education, 2010.
3.	Judith Jeffcoate, "Multimedia in practice: Technology and Applications", PHI, 1998.