B.Sc. Computer Science

SEMESTER – VI

Course Code	Course Title	H	C	I	E	T
17U6DME2	Elective II – H. Computer Graphics	5	4	25	75	100

Objectives:
- To impart the knowledge of computer graphics.
- Learning the concepts of various aspects of graphical primitives and algorithms.

Unit – I   **Total Hours: 75**
Geometry & Line Generation   **(15 Hours)**
Introduction – Pixels & frame buffers - Vector generation - Bresenhams's algorithm - Antialiasing of lines - Thick line segments Character generation - Displaying the frame buffer.

Unit – II
Polygons   **(15 Hours)**
Introduction – Polygons - Polygon representation - Entering polygons - An inside test - Polygon interfacing algorithms - Filling polygons - Filling with a pattern.

Unit – III
Transformations   **(15 Hours)**
Introduction - Matrices - Scaling transformations - Sin and Cos –Rotation - Homogeneous coordinates & translation - Coordinate Transformations - Rotation about an arbitrary point - Other Transformations – Inverse transformations - Transformation Routines - Display procedures.

Unit – IV
Segments   **(15 Hours)**
Introduction - The segment table - Segment creation - Closing a segment - Deleting a segment - Renaming a segment - Visibility – Image transformation - Saving and Showing Segments - Other displays – File Structures.

Unit – V
Windowing & Clipping   **(15 Hours)**
Introduction - The viewing transformation - Clipping - The Cohen - Sutherland out code algorithm - The Sutherland hodgman algorithm - Adding clipping to the system - Multiple windowing.

Text Book:
"Computer Graphics, A Programming Approach" – Steven Harrington – Second Edition McGraw Hill International Edition.

Chapters:
  Unit – I: Chapter 1
  Unit – II: Chapter 3
  Unit – III: Chapter 4
  Unit – IV: Chapter 5
  Unit – V: Chapter 6

Reference Books:
  1. "Principles of Interactive Computer Graphics"- Newman & Sproull – Second Edition McGraw Hill Edition.
  2. "Computer Graphics"- Donald Hearn|M.Pauline Baker- Second Edition-PHI.