Course Code	Type	Subject	L	T	P	Credits	CA	MS	ES	CA	ES	Pre-requisites
CEC12	CC	Computer Graphics	3	0	2	4	15	15	40	15	15	None

COURSE OUTCOMES

1. To understand the underlying mathematics for output primitives and to incorporate with programming in drawing those primitive.
2. To use graphics primitives in drawing real life objects and to learn how to incorporate characteristics such as shading and animation.
3. To work in collaboration to carry out graphic projects.

COURSE CONTENT

Introduction to computer graphics: Raster Graphics, Graphics hardware, Graphics Libraries and an overview of any one of them such as OpenGL.
Scan Conversion: Line DDA, Midpoint and Bresenham's algorithms, circle, ellipse, parabola, hyperbola.
Line Clipping-Cohen Sutherland, Cyrus Beck, Midpoint Subdivision, Liang-Barsky, Nicholl-Lee-Nicholl
Polygon clipping -Sutherland Hodgman, Weiler Atherton
Polygon Filling-Seed fill, Scanline Approach
Anti-Aliasing: Un-Weighted and Weighted Area Sampling, Gupta-Sproull Algorithm for Anti-Aliasing
Transformation: 2D Transformation - Geometrical Transformation, Homogeneous Coordinates, Window to View port Transformation, Translation, Scaling and Rotation, 3 D Transformation - Translation, Scaling and Rotation in 3D
Projection: Perspective and Parallel Projection
3 D Viewing: Three dimensional Modeling
Visible Surface Detection (Hidden Surface Elimination): Z-Buffer, Painter Algorithm, Back face Detection, Area subdivision Method, BSP Tree, Octree
Curves and Surfaces: Parametric Cubic Curves, Uniform and Non Uniform Rational B-Spline, Hermite Curve, Bezier Curve, Quadratic Surfaces
Illumination Models: Gouround and Phong Shading Model, Color Model