CSEG3103	**Computer Graphics Lab**	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	Basic knowledge about matrix and geometry. Knowledge of C/C++				
Co-requisites	--				

Course Objectives:

1. The student should be able to design and implement 2D and 3D objects.
2. To carry out transformation algorithms on geometric shapes.
3. To learn realistic 3D imagery concepts

Course Outcomes
After completion of this course student will be able to
CO1. Create 2D shapes using scan algorithms.
CO2. Demonstrate 2D and 3D geometric transformations.
CO3. Design curves and surfaces of higher order.
CO4. Apply shading, colouring and hidden surface removal techniques to create 3D realistic imagery.

Catalog Description

This course discusses many computer graphics algorithms. It is a study of the hardware and software principles of interactive raster graphics. Topics include an introduction to the basic concepts, 2-D and 3-D modeling and transformations, viewing transformations, projections, rendering techniques, graphical software packages and graphics systems. Students will use standard graphics application programming interface (OpenGL) to reinforce concepts. The course also includes vertex processing; lighting and shading, rasterization including line and polygon drawing, ray casting, ray tracing, computer graphics in games visualization .

List of Experiments

Experiment 1: Introduction to OpenGL

Experiment 2 Drawing line using DDA, Bresenham's algorithm

Experiment 3: Drawing Circle and Ellipse using Mid-point algorithm

Experiment 4: Filling the objects using flood fill, boundary fill and scan line fill algorithm

Experiment 5&6: Performing Clipping operation on line and polygon using Cohen Sutherland and Sutherland Hodgeman algorithms respectively

Experiment 7&8: Performing 2D & 3D TRANSFORMATIONS on objects

Experiment 9: Drawing Bezier curves

Experiment 10: Animation & Event Handling using Mouse and Keyboard

Experiment 11&12: Creating 3D Shapes like Cube, Sphere and others

Text Books / Reference Books

1. OpenGL: Programming Guide, the Official Guide to Learning OpenGL. Authors: Dave Shreiner, John Kessenich, Bill Licea-Kane,The Khronos OpenGL ARB Working Group.
2. OpenGL Programming Guide Paperback – 2008 Author by Mason Woo (Author), Dave Shreiner (Author)

Relationship between the Course Outcomes (COs), Program Outcomes (POs) and Program Specific Objectives (PSOs)

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO2	1	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO3	1	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO4	1	2	2	-	-	-	-	-	-	-	-	-	2	-	-
Average	1	2	2	-	-	-	-	-	-	-	-	-	2	-	-

1=weak   2= moderate   3=strong