

Sub Title : Computer Graphics And Visualization Laboratory		
Sub Code: CSL66	No. of Credits: 1.5=0 : 0 : 1.5 (L-T-P)	No. of lecture hours/ week : 3
Exam-Duration: 3 Hrs	CIE +SEE = 50+50 = 100	

Course objectives:

This course will help students to achieve the following objectives:

1. Understand and explain the mathematical and theoretical principles of computer graphics eg: To draw basic objects like lines, triangles and polygons and apply animation, also model 3D objects using OpenGL built-in functions.
2. Use matrix algebra in computer graphics and implement fundamental algorithms and transformations involved in viewing models.
3. Write basic but complete graphics software systems projection models, illumination models and handling of hidden surfaces and clipping in computer graphics.

S.No.	Design, develop, and implement the following programs in C / C++
1.	a. Program to implement a FLYING KITE b. Create 2D Sierpinski gasket by recursive subdivision of triangle.
2.	a. Write a program to rotate a square. Rotate on mouse left-button clicks. On right click, stop rotation. b. Create 3D Sierpinski gasket by recursive subdivision of tetrahedron.
3.	a. Write a program to handle mouse events. Plot points in random colors by pressing the mouse left button. The display window must be cleared when you press the mouse right button. b. Write a program to demonstrate the usage of display lists. The list should define various geometric objects like square, rectangle, triangle.
4.	a. Write a program to create a font for the letter S of user input thickness. b. Write a program to perform rotation of a cube using vertex arrays.
5.	a. Write a program to create a font for the letter O of user input thickness b. Write a program to draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing.

6.	<p>a. Write a program to create a chessboard.</p> <p>b. Write a program, using OpenGL functions, to demonstrate properties of the light source along with properties of the surfaces of the solid object.</p>
7.	<p>a. Write a program to create a rotating wheel.</p> <p>b. Write a program to draw a square. Use popup menu with options to quit or resize the square. The resize option has submenu with increase size and decrease size as options. The increase size must double the size of the square and the decrease size option must reduce the size by 2. (half size).</p>
8.	<p>a. Write a program to display a hierarchical menu as below using popup menu. When an option is selected, display the option on output window.</p> <pre style="margin-left: 400px;">View _____ normal _ print _ web Edit _____ cut _ copy _ paste</pre> <p>b. Write a program to create a house like figure and rotate it about a given fixed point using OpenGL functions.</p>

Note: One program from Part A (20 marks) and One program from Part B (30marks) should be executed.

Course Outcomes:

At the end of the course students will be able to:

CO1: Model 3D objects and also able to animate using OpenGL built-in functions.

CO2: Use matrix algebra in computer graphics and implement fundamental algorithms and transformations involved in viewing models.

CO3 : Design and Develop complete graphics software systems projection models, illumination models and handling of hidden surfaces and clipping in computer graphics.

Cos	Mapping with Pos
CO1	PO1,PO2,PO3,PO5,PO12
CO2	PO1,PO2,PO3,PO5
CO3	PO1,PO2,PO3,PO5,PO12

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Note: One program from Part A (20 marks) and One program from Part B (30 marks) should be selected.
