BANGALORE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, UVCE, BENGALURU
B.Tech. PROGRAMME IN COMPUTER SCIENCE AND ENGINEERING

Course Code	**18CIPC507**					
Category	Engineering Science Courses : Professional Core					
Course title	**COMPUTER GRAPHICS – LABORATORY**					
Scheme and Credits	No. of Hours/Week					Semester - V CSE/ISE
	L	T	P	SS	Credits	
	0	0	3	0	1.5	
CIE Marks: 50	SEE Marks: 50		Total Max. Marks: 100			Duration of SEE: 03 Hours
Prerequisites (if any): NIL						

COURSE OBJECTIVES:

The course will enable the students to

1. Design and develop software packages for 2D/3D graphical applications.
2. Geometric transformations on 2D and 3D objects in OpenGL.
3. Know about Clipping Algorithms.
4. Know about various viewing functions in OpenGL.
5. Works in graphics packages like OpenGL for application development.

PART A

1. Implement Brenham's line drawing algorithm for all types of slope.
2. Create and rotate a triangle about the origin and a fixed point.
3. Draw a colour cube and spin it using OpenGL transformation matrices.
4. Draw a colour cube and allow the user to move the camera suitably to experiment with perspective viewing.
5. Clip a lines using Cohen-Sutherland algorithm.
6. To draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene.
7. Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinski gasket. The number of recursive steps is to be specified by the user.
8. Develop a menu driven program to animate a flag using Bezier Curve algorithm.
9. Develop a menu driven program to fill the polygon using scan line algorithm.

PART B

Develop a mini project to implement the skills learnt in theory and exercises indicated in Part A. Use OpenGL software.

NOTE:

1. Any question from Part A may be asked in the examination.
2. A report of about 10 – 12 pages on the package developed in Part B, duly certified by the Department must be submitted during examination.

TEXT BOOKS:

1. E. S. Angel, Interactive Computer Graphics, A top-down approach with OpenGL, (5e), Pearson Education, 2009.

REFERENCE BOOKS:

1. M M Raiker, Computer Graphics using OpenGL, Filip learning/Elsevier.

e-BOOKS/ONLINE RESOURCES:

1. http://www.cse.iitm.ac.in/~vplab/courses/CG/PDF/OPENGL_BASICS.pdf
2. https://learnopengl.com/

MOOCs:

1. https://www.mooc-list.com/tags/computer-graphics
2. https://www.nptelvideos.com/computer_graphics/

COURSE OUTCOMES:

The students at the end of the course, will be able to

CO1: Design and develop 2D/3D graphics applications.
CO2: Analyze Geometric transformations on 2D and 3D.
CO3: Apply the concepts of clipping in 2D and 3D viewing.
CO4: Able to develop algorithms for viewing geometrical objects.
CO5: Able to know graphics packages like OpenGL for application development.

SCHEME OF EXAMINATION:

Continuous Internal Evaluation (CIE) Laboratory - (50 Marks)	**Marks**	**Semester End Evaluation (SEE) Laboratory - (100 Marks)**	**Marks**
Performance of the student in the laboratory, every week	20	Write up	20
Test at the end of the semester (Part A + Part B)	20	Execution of any one program from Part A and demonstration of mini project from Part B	60
Viva voce	10	Viva voce	20
Total	**50**	**Total**	**100**

Note: SEE shall be conducted for 100 Marks and the Marks obtained is scaled down to 50 Marks.

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