

Computer Graphics					
Credit Hours:	2	Course Code:	COSC-4106	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course the students will be able to:				Domain	BT Level
1. Describe and explain the significance of Computer Graphics				C2 (Understand)	2
2. Describe the fundamental 2D and 3D algorithms used in computer graphics				C3 (Apply)	3
3. Implement the mathematics required to create 2D and 3D images in a view volume				C3 (Apply)	3
* BT= Bloom’s Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain					
#	SDG	Relevant CLOs			
1	SDG 4: Quality Education	CLO 1: Describe the fundamental 2D and 3D algorithms used in computer graphics			
Course Content:					
Introduction to Computer Graphics, Graphics Systems, Point, Line Drawing Techniques, Circle Drawing Techniques, Ellipse and Other Curves, 2D Transformations , Clipping, 3D Concepts, 3D Transformations, Perspective Projection, Triangles & Planes, Triangle Rasterization ,Lighting, Introduction to OpenGL, Animations					
Teaching Methodology:					
Lectures, Written Assignments, Practical labs, Semester Project, Presentations					
Course Assessment:					
Sessional Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam					
Reference Material:					
1 Computer Graphics using OpenGL Author: F.S. Hill Jr. & Stephen M. Kelley Jr. 3rd Edition ISBN: 0023548568					
2. Computer Graphics with OpenGLby Donald Hearn and M. Pauline Baker 2nd Edition					
Computer Graphics - Lab					
Credit Hours:	1	Course Code:	COSC-4206	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course the students will be able to:				Domain	BT Level
1. Describe and explain the significance of Computer Graphics				C2 (Understand)	2
2. Describe the fundamental 2D and 3D algorithms used in computer graphics				C3 (Apply)	3
3. Implement the mathematics required to create 2D and 3D images in a view volume				C3 (Apply)	3
* BT= Bloom’s Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain					

#	SDG	Relevant CLOs
1	SDG 4: Quality Education	<i>CLO 1:</i> Describe the fundamental 2D and 3D algorithms used in computer graphics
Course Content:		
Configure open GL library / Graphics library in DEV CPP. Implement Brenham's line drawing algorithm for all types of slope. Analysis of code and discussion on the slope of each line and concepts. Draw a color cube and spin it using OpenGL transformation matrices. Draw a color cube and spin it using OpenGL transformation matrices and change the values of matrices and analysis the effects and link the class lecture. Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing. Clip a lines using Cohen-Sutherland algorithm. Analysis the algorithm and discuss clip a lines using Cohen-Sutherland algorithm. Develop a menu driven program to animate a flag using Bezier Curve algorithm. Analysis the algorithm and discuss developed a menu driven program to animate a flag using Bezier Curve algorithm. Design recursively subdivide a tetrahedron to form 3D sierpinskigasket. The number of recursive steps is to be specified by the user. Develop and implement recursively subdivide a tetrahedron to form 3D sierpinskigasket. The number of recursive steps is to be specified by the user. Develop a menu driven program to fill the polygon using scan line algorithm. Analysis the algorithm of menu driven program to fill the polygon using scan line algorithm. Design the MS paint front-end using line, rectangle function. All above functions and map with line box with line function and rectangle function with rectangle box and so on.		
Teaching Methodology:		
Lectures, Written Assignments, Practical labs, Semester Project, Presentations		
Course Assessment:		
Sessional Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam		
Reference Material:		
1 Computer Graphics using OpenGL Author: F.S. Hill Jr. & Stephen M. Kelley Jr. 3rd Edition ISBN: 0023548568 2. Computer Graphics with OpenGLby Donald Hearn and M. Pauline Baker 2nd Edition		