



FACULTY OF: Computer Science

DEPARTMENT OF: Master of Science (Computer Applications & Information Technology)

SEMESTER: VI

CODE: 4CS06CGE1

NAME: Computer Graphics

Sr. No	Subject Code	Subject Name	Teaching Hours/Week				Credits	Evaluation Scheme/Semester							
			Th	Tu	Pr	Total		Theory				Practical			Total Marks
								Sessional Exam		University Exam		Internal		Uni.	
								Mark	Hrs	Mark	Hrs	Pr	TW	Pr	
1	4CS06CGE1	Computer Graphics	4	0	0	4	4	30	1½	70	3	100	0	0	100

Objectives:

- To know and be able to describe the general software architecture of programs that use 2D computer graphics.
- Know and be able to discuss hardware system architecture for computer graphics. This includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors.

Pre-requisites:

- Knowledge of Computer Programming, algorithms and mathematical method to implement graphics logic through the programming.

Course outline:

SNo.	Course Contents	No. of Hours
1	Introduction: Computer Graphics, Elements of a Graphics, Application of Computer Graphics, I/O Devices, Display System, Color Monitors, Display Processors, Resolution	12
2	Scan Conversion Techniques : Image representation, Simple Line drawing Algorithm, DDA Line Drawing Algorithm, Bresenham’s Line Drawing Algorithm, Simple Circle drawing Algorithm, Mid point Circle Drawing Algorithm, Bresenham’s Circle Drawing Algorithm	10
3	2D & 3D Transformation : Translation, Rotation, Scaling, Reflection, Curves, Bezier curve, B-spline curve, viewing Transformation, Parallel and Perspective Projections	10
4	Graphics Operations : Clipping, Window Port & Viewport Clipping, Line Clipping Algorithms, Sutherland Cohen Line Clipping algorithms, Introduction to Hidden Surface elimination, Basic illumination model, diffuse reflection, specular reflection, phong shading, Gourand shading ray tracing, color models like RGB, YIQ, CMY, HSV etc.	8
5	Visibility: Character Generation, Generation of Bar Chart, Generation of Pie Chart, Stack Based	8

Learning Outcomes:

- Be able to design and implement models of surfaces, lights, sounds, and textures (with texture transformations) using a 2D graphics API.
- Be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
- Be able to discuss future trends in computer graphics and quickly learn future computer graphics concepts and APIs.

Books Recommended:

- “Procedural Elements for Computer Graphics”, David F. Rogers, McGraw Hill
- “Computer Graphics”, Schaum Series, Lipschutz, McGraw Hill.