

60944 -DIPLOMA IN INFORMATION TECHNOLOGY & ENGINEERING
SEMESTER -I
094464 COMPUTER GRAPHICS
(Common with Computer Engineering)

RATIONALE

This subject will enable the students to have awareness about fundamental graphics which can be generated through computers using programming language C. He will be able to make picture and introduce motion in them using basic transformation.

DETAILED CONTENTS

1. Graphic Systems

Display devices, physical input and output devices, display processors graphics software coordinate representation, graphics functions and standards.

2.. Scan conversion and Output Primitives

- Scan converting the point
- Scan converting the straight line - Bresenham's line algorithm.
- Scan converting a circle - Defining a circle
- Bresenham's circle algorithm.
- Region filling - introduction, flood filling, boundary filling
- Side effects of scan conversion.

Graphic primitives in C, Point plotting, line drawing algorithms – DDA algorithms, Bresenham's line algorithms, circle -generating algorithms, ellipses

3. Two-Dimensional Transformations

Basic transformations-translation, scaling, rotation, matrix representations and homogeneous coordinates, composite transformations – scaling relative to a fixed pivot, rotation about a pivot point, general transformation equations, other transformation – reflection.

4. Windowing and Clipping Techniques

Windowing concepts clipping algorithms, area clipping, line clipping, polygon clipping, text clipping, blanking, window to-viewpoint transformation, Cohen Sutherland clipping algorithm.

5. Three Dimensional Graphics

Three dimensional transformation, wire frame model, hidden line and hidden surface elimination

6. Perspective and Parallel transformations, vanishing points, perspective anomalies

LIST OF PRACTICALS

Write programs for following:

1. To draw a line
2. To move a character about a line
3. To move two characters in. opposite direction.
4. To draw a circle

5. To move a character along circumference
6. To move along radius.
7. To use 2-d translation technique,
8. To use 2-d scaling technique
9. To use 2-d rotation technique.
10. To use 2-d reflection technique
11. Animation using corel move.

INSTRUCTIONAL STRATEGY

As the subject deals with Core Graphics Packages and techniques with vast applications in Medical Science, Animation Software, Image Processing, Compression techniques. Teacher is required to expose basic idea of graphics and implementation of various algorithms in C Programming language. The teacher should make the students to write the algorithm first and then based on those algorithms make them implement.

RECOMMENDED BOOKS

1. Principles of Interactive Computer Graphics by WM Newman and RF Spraul
2. Theory and problems of Computer Graphics by Roy A Plastock and Gordon Kalley. McGraw Hill Publishers, Schaum's Outline series.
3. Interactive Computer Graphics by Harengton
4. Computer Graphics Programming Approach by Steven Harrington
5. Computer Graphics by Donald Hearn and M Pauline Baker
6. Computer Graphics for Engineers by A Rajaraman, Narosa Publishing House Pvt Ltd Daryaganj, New Delhi 110002