COMPUTER SCIENCE LAB (C-XIV): Computer Graphics
Total Marks: 150

Theory: 75

Practical: 50

Internal Assessment: 25

5 Lectures , 4 Practicals(each in group of 15 to 20)
 Theory: 60 Lectures

1.Introduction   (5 Lectures)

Basic elements of Computer graphics, Applications of Computer Graphics.

2.Graphics Hardware   (8 Lectures)

Architecture of Raster and Random scan display devices, input/output devices.

3.Fundamental Techniques in Graphics   (22 Lectures)

Raster scan line, circle and ellipse drawing, thick primitives, Polygon filling, line and polygon clipping algorithms, 2D and 3D Geometric Transformations, 2D and 3D Viewing Transformations (Projections- Parallel and Perspective), Vanishing points.

4.Geometric Modeling   (10 Lectures)

Representing curves & Surfaces.

5.Visible Surface determination   (8 Lectures)

Hidden surface elimination.

6.Surface rendering   (7 Lectures)

Illumination and shading models.Basic color models and Computer Animation.

Books Recommended:

1. J.D.Foley, A.Van Dan, Feiner, Hughes Computer Graphics Principles & Practice 2nd edition Publication Addison Wesley 1990.

2. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008.

3. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997.

4. D.F.Rogers, Adams Mathematical Elements for Computer Graphics, McGraw Hill 2nd edition 1989.

COMPUTER SCIENCE LAB (C-XIV): Computer Graphics Lab

Practical: 60 Lectures

1. Write a program to implement Bresenham's line drawing algorithm.

2. Write a program to implement mid-point circle drawing algorithm.

3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.

4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.

5. Write a program to fill a polygon using Scan line fill algorithm.

6. Write a program to apply various 2D transformations on a 2D object (use homogenous coordinates).

7. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.

8. Write a program to draw Hermite /Bezier curve.

Discipline Specific Elective Papers COMPUTER SCIENCE: (Credit: 06 each) – DSE-1 ,DSE-2,DSE-3,DSE- 4.

DSE – 1 (any one)

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1 (a) Systems Programming
Total Marks: 150

Theory: 75

Practical: 50

Internal Assessment: 25

5 Lectures , 4 Practicals(each in group of 15 to 20)
Theory: 60 lectures

Assemblers & Loaders, Linkers: 12L

One pass and two pass assembler, design of an assembler, Absolute loader, relocation and linking concepts, relocating loader and Dynamic Linking.