Computer Graphics Guidelines
B.Sc(H) Computer Science 6th Semester
(CBCS Guidelines)

S.No	Topic	Reference	No. Of Lectures
1	**Introduction:** Basic elements of Computer graphics, Applications of computer graphics.	**[2]** Sections 1.1-1.8 (Pages 23-54)	3
2	**Graphics Hardware:** Architecture of Raster and Random scan display devices, input/output devices.	**[2]** Sections 2.1-2.6 (Pages 57-94)	5
3	**Drawing Primitives:** Raster scan line, circle and ellipse drawing algorithms, Polygon filling, line clipping and polygon, clipping algorithms	**[1]** Sections 3.2 -3.2.2 (Pages 72-78), Section 3.3 (Pages 81-85) (before 2nd order differences), Section 3.4 (Pages 88-90), Sections 3.6 (Pages 92-99), Section 3.9 (Pages 104-109) , Section 3.12-3.12.3 (Pages 111-117), Section 3.14 (Pages 124-127), Section 3.17-3.17.3 (Pages 132-137)	12
4	**Viewing And Transformations:** 2D and 3D Geometric Transformations, 2D and 3D Viewing Transformations , Vanishing points.	**[3]** Sections 2.1-2.21 (Pages 61-99), Sections 3.1-3.17 (Pages 101-184)	12
5	**Geometric Modeling:** Representing curves(Hermite and Bezier)	**[1]** Section 11.2.1-11.2.2 (Pages 483-491)	6
6	**Visible Surface determination:** Z-buffer algorithm, Depth Sort algorithm and Warnock's algorithm	**[1]** Section 15.4-15.5.1 (Pages 668-675), Section 15.7.1 Pages(686-689)	6
7	**Surface rendering:** Color Models, Illumination and shading models, Computer Animation	**[2]** Sections 14.1-14.2 (Pages 516-531), Sections 14.4-14.5 (Pages 536-545), Sections 15.3-15.7 (Pages 591-597), Sections 16.1-16.6 (Pages 604-616)	6

Text Books

1. Computer Graphics: Principles and Practice 2nd Edition in C, James D. Foley , Andries van Dam, Steven K. Feiner , John F. Hughes , Pearson Education Asia, 1999.
2. Computer Graphics C version (2nd Edition), D.Hearn, M.P. Baker: Pearson Education, 2006.
3. Mathematical Elements for Computer Graphics 2nd Edition, D.F. Rogers, J. A. Adams, Mc Graw Hill 2 nd edition , 2002.

PRACTICAL LIST BASED ON COMPUTER GRAPHICS

1) Write a program to implement Bresenhams 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.