

**Computer Graphics Guidelines**  
**B.Sc(H) Computer Science 6<sup>th</sup> Semester**  
**(CBCS Guidelines)**

S.No	Topic	Reference	No. Of Lectures
1	<b>Introduction:</b> Basic elements of Computer graphics, Applications of computer graphics.	[2] Sections 1.1-1.8 (Pages 23-54)	3
2	<b>Graphics Hardware:</b> Architecture of Raster and Random scan display devices, input/output devices.	[2] Sections 2.1-2.6 (Pages 57-94)	5
3	<b>Drawing Primitives:</b> 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 2 <sup>nd</sup> 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	<b>Viewing And Transformations:</b> 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	<b>Geometric Modeling:</b> Representing curves(Hermite and Bezier)	[1] Section 11.2.1-11.2.2 (Pages 483-491)	6
6	<b>Visible Surface determination:</b> 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	<b>Surface rendering:</b> 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 (2<sup>nd</sup> Edition), D.Hearn, M.P. Baker: Pearson Education, 2006.
3. Mathematical Elements for Computer Graphics 2<sup>nd</sup> Edition, D.F. Rogers, J. A. Adams, Mc Graw Hill 2<sup>nd</sup> edition , 2002.

## **PRACTICAL LIST BASED ON COMPUTER GRAPHICS**

- 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.