

CMP 364.3 Computer Graphics (3-1-3)

	Theory	Practical	Total
Sessional	30	20	50
Final	50	-	50
Total	80	20	100

Course Objectives:

To be familiar with the basic techniques used in computer graphics systems.

Course Contents:

- 1. Introduction (3 hrs)**
History of compute graphics, Applications of computer graphics.
- 2. Hardware Concepts (8 hrs)**
Keyboard mouse, light pen, touch screen and tablet input hardware, Raster and vector display architecture, Architecture of simple non-graphical display terminals, Architecture of graphical display terminals including frame buffer and color manipulation techniques, Advanced raster graphic architecture.
- 3. Two-Dimensional Algorithms (12 hrs)**
Direct and incremental line drawing algorithms, Bresenham algorithms, Two-dimensional object to screen viewing transforms, Two-dimensional rotation, scaling and translation transforms, Recent transform concepts and advantages, Data structure concepts and CAP packages.
- 4. Graphical Languages (6 hrs)**
Need for machine independent graphical languages, Discussion of available languages and file formats, Detailed discussion of graphical languages to be used in projects.
- 5. Three-Dimensional Graphics (12 hrs)**
Three-dimensional object to screen perspective viewing transforms, Extension of two-dimensional transforms to three dimensions. Methods of generating non-planar surfaces, Hidden line and hidden surface remove techniques, Need for shading in data visualization, Algorithms to simulate ambient, diffuse and specular reflections, Constant, Gouraud and Phong shading models, Specialized and future three-dimensional display architectures.
- 6. Project Development (4 hrs)**
Project planning and description, Project development, Project report and presentation.

Laboratory:

Develop a graphical project. The topic could be either initiated by the student or selected from a list provided by the instructor. An oral presentation with a demonstration should be part of the laboratory project report.

Test Book:

1. Hearn and Baker, *Computer Graphics*, Prentice- Hall of India Private Limited.

