**Module 1**



**Syllabus :**

Definition and Representative uses of computer graphics, Overview of coordinate system, Definition of scan conversion, rasterization and rendering.

Raster scan & random scan displays, Architecture of raster graphics system with display processor, Architecture of random scan systems.

**Module 2**



**Syllabus :**

Scan conversions of point, line, circle and ellipse : DDA algorithm and Bresenham algorithm for line drawing, midpoint algorithm for circle, midpoint algorithm for ellipse drawing (Mathematical derivation for above algorithms is expected)

Aliasing, Antialiasing techniques like Pre and post filtering, super sampling, and pixel phasing).

**Module 3**



**Syllabus :**

Basic transformations : Translation, Scaling, Rotation, Matrix representation and Homogeneous Coordinates, Composite transformation

Other transformations : Reflection and Shear

**Module 4**



**Syllabus :**

Viewing transformation pipeline and Window to Viewport coordinate transformation

Clipping operations: Point clipping, Line clipping algorithms : Cohen-Sutherland, Liang : Barsky, Polygon Clipping Algorithms : Sutherland-Hodgeman, Weiler-Atherton.

**Module 5**



**Syllabus :**

Introduction, Translation, Rotation, Scaling, Reflection, Composite transformations, Rotation about an arbitrary axis

**Module 6**



**Syllabus :**

Visible Surface Detection : Classification of Visible Surface Detection algorithm, Back Surface detection method, Depth Buffer method, Area Subdivision method



**Syllabus :**

Introduction to Animation, Traditional Animation Techniques, Principles of Animation, Key framing : Character and Facial Animation, Deformation, Motion capture



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