SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar
Programme & Subject : B.Sc. CA & IT
Semester – V
PS05CIIT23 : Computer Graphics
(Syllabus Effective from June 2020)

Credits : 4   **External : 70 Marks**
Contact Hrs per Week : 4   **University Examination Duration: 3 Hrs**
All units carry equal weightage

Unit	Description in detail
I	**Introduction of Computer Graphics** A survey of major applications of Computer Graphics Overview of different video display Devices: CRT, Raster scan, Color Monitors, DVST, Flat Panels, Graphics Software & coordinate representation, Graphics functions, Software Standards Output primitives: Points, Lines, Circle, Line Drawing Algorithms (without program): Digital Differential Analyzer (DDA) and Bresenham. Circle generating algorithm (without program): Midpoint Circle
II	**Area Filled Algorithms and 2D Concept:** Circles Algorithm Filled area primitives Inside – Outside tests: Odd even rule & Non-zero winding number rule Boundary-fill algorithm (with procedure) Flood-Fill Algorithm (with procedure), Character generation, Attributes of output primitives, 2-D geometric Transformations: Translation, Rotation, Scaling, Reflection & Shear (with example) Viewing Pipeline, Window-to-Viewport transformation Point Clipping Line clipping (without program) Cohen Sutherland line clipping algorithm Polygon Clipping (without program) Text clipping
III	**3D concepts and Basics of Blender:** Introduction, Rendering and animation basic concepts, Basic Key Commands, The Blander Interface, Viewports, Creating and Editing Objects, Materials and Textures, Lighting and Cameras, Render settings, Ray tracing, Adding 3D Text, NURBS and Meta Shape Basics, Modifiers
IV	**Advanced Concept of Blender:** Particle Systems and Interactions, Child-Parent Relationships, Working With Constraints, Armatures (bones and skeletons), Object Physics, Working With Nodes, Creating Springs, Screws, Gears and other Add-On Shapes, Game Engine Basics (real-time animation), Textures in the Game Engine, Video Sequence Editor.

Basic Text & Reference Books:

1. Computer Graphics by Donald Hearn & M. Pauline Baker, PHI, 1995
2. Computer Graphics, Foley and van Dam - Person Education
3. Computer Graphics, Sinha & Udai, - TMH
4. Blender Basics Classroom Tutorial Book – 4th Edition – e-book by James Chronister