

# SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

B.C.A. Semester – V

US05DBCA21 : 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
<b>I</b>	<b>Introduction of Computer Graphics</b> A survey of major applications of Computer Graphics Overview of different video display Devices: CRT, Raster scan, Color Monitors, DVST, Flat Panels Input Devices: Keyboard, mouse, Trackball, Spaceball, Joystick, Data Glove, Digitizers, Image Scanner, Touch Panel, Light pen & Voice system.
<b>II</b>	<b>Output Primitives and their attributes</b> Output Primitives: Points, Lines, Circles Line Drawing Algorithms (without program): Digital Differential Analyzer (DDA) and Bresenham. Circle generating algorithm (without program): Midpoint Circle Algorithm Filled area primitives – Scan line Polygon Fill Algorithm, Inside–Outside tests: Odd even rule & Non-zero winding number rule Boundary-fill algorithm (with procedure), Character generation, Attributes of output primitives
<b>III</b>	<b>Two– dimensional Geometric Transformations, Viewing &amp; Clipping</b> 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, Exterior Clipping
<b>IV</b>	<b>Graphical User Interface and Interactive Input methods and 3D Concepts</b> Graphical User Interface and Interactive Input methods – Introduction to user Dialogue, Input of Graphical Data, Input Functions- Introduction to Input functions and input modes, Interactive Picture Construction Techniques, Virtual -Reality Environments. 3D Concepts – Three Dimensional Display Methods, Three Dimensional Object Representations – Introduction to different methods used for representation of Three Dimensional Objects.

## Basic Text & Reference Books :-

1. Computer Graphics by Donald Hearn & M. Pauline Baker, PHI, 1995
2. Computer Graphics, Amarendra N Sinha & Arun D. Udai, - The McGraw-Hill
3. Computer Graphics: Principles and Practice, Andries van Dam; F. Hughes John; James D. Foley; Steven K. Feiner - Person Education