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| Hours / Week | : | 4 | |  | Sessional Marks | : | 40 |
| Credits | : | 4 | |  | End Examination Marks | : | 60 |

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| **UNIT - I** |
| **Introduction**: Definition, Advantages of Interactive Graphics, Representative uses of Computer Graphics, Classifications of Applications, Development of Hardware and Software for Computer Graphics, Conceptual Frame work for Interactive Graphics.  **Basic Raster Graphics algorithms for Drawing 2-D Primitives**: Overview, Scan Conversion of lines, Circles, Ellipse, Filling Polygons, Generating Characters, Anti-aliasing. |
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| **UNIT – II** |
| **Graphics Hardware**: Hard copy Technologies, Soft copy Technologies, Raster Scan display system, Random Scan display system, Input devices for Operator Interaction.  **Geometrical Transformation**: 2D Transformations, Homogeneous Co-ordinates and Matrix representation of 2D Transformations, Composition of 2D Transformations and Window-to-View port Transformations. |
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| **UNIT – III** |
| **Viewing in 3D**: Definition of Projections, Types of Projections and example of Projections. Co-ordinate Systems  **Representing Curves and Surfaces**: Polygon Meshes, Parametric Cubic Curves, Parametric Bi-Cubic Surfaces, Quadric Surfaces. |
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| **UNIT – IV** |
| **Solid Modeling**: Representing Solids, Regularized Boolean Set Operations, Primitive Instancing, Sweep Representation, Boundary Representation, Spatial Partitioning Representation, Comparison of Representation.  **Visible Surface Determination**: Functions of two Variables, Techniques for efficient Visible Surface Algorithms, Z-Buffer algorithm, List Priority algorithm, Scan Line algorithm, Visible Surface Ray Tracing. |
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| **UNIT - V** |
| **Illumination and Shading**: Illumination models, Shading models for polygons, Surface Details, Shadows, Transparency.  **Animation**: Define Animation, Conventional and Computer assisted Animation, Animation Languages, Methods for Controlling Animation, Basic rules of Animation. |
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| TEXT BOOKS |
| 1. Computer Graphics Principles and Practice Second edition by James D.Foley, Andries Van Dam, Streven K.Feiner, John F.Hughes. |
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| REFERENCE BOOKS |
| 1. Computer Graphics with OpenGL, Donald D. Hearn, M. Pauline Baker. Prentice Hall; 3rd edition 2003. 2. Computer Graphics, Zhigaud Xiang, TMH, 2nd Edition. 3. Principles of Interactive Computer Graphics, Neuman, TMH. |