Course: 601: Computer Graphics

Course Code	601
Course Title	Computer Graphics
Credit	4
Teaching per Week (Min.)	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.) Total 40 hours
Review / Revision	June 2019
Purpose of Course	Make students aware and understand Computer Graphics.
Course Objective	To make students understand and learn the geometrical processes on various shapes, objects and text.
Pre-requisite	Basic concepts of computer-based animation, various objects and basic school geometry.
Course Out come	Students will be able to understand and write algorithms for construction of various shapes like line, circle & ellipse, and various processes on them.
Course Content	**Unit 1. Introduction** 1.1 Application areas of Graphics Systems 1.1.1. Presentation Graphics 1.1.2. Entertainment 1.1.3. Education and Training 1.1.4. Image Processing 1.2 Computer Graphics Files 1.3 Introduction to graphic standards **Unit 2. Graphics Systems** 2.1. Video Display Devices 2.1.1. Refresh CRT 2.1.2. Color CRT 2.1.3. LCD 2.1.4. Direct View Storage Tube 2.2. Raster scan and Random Scan Display 2.3. Raster Graphics and Vector Graphics 2.4. Concepts of various objects: Point, Line, Circle, Ellipse and Polygons **Unit 3. Line generation** 3.1. Geometry of line 3.2. Frame Buffer 3.3. Line Drawing Algorithms 3.3.1. DDA Algorithm 3.3.2. VECGEN 3.3.3. Bresenham 3.4. Line Styles 3.4.1. Thick line 3.4.2. Line caps and joint 3.5. Anti-aliasing of line **Unit 4. Polygons** 4.1 Polygon Representation 4.2 Polygon Inside Tests 4.2.1 Even-odd method 4.2.2 Winding number method 4.3 Polygon Area Filling Algorithm

	4.3.1 Flood Fill 4.3.2 Scan Line 4.3.3 Boundary Fill 4.4 Filling polygon with a pattern **Unit 5. Geometric Transformations** 5.1 Basic Transformations 5.1.1 Scaling 5.1.2 Translation 5.1.3 Rotation 5.1.3.1 Rotation about origin 5.1.3.2 Rotation about Homogeneous Coordinates 5.2 Other transformations 5.2.1 Reflection 5.2.2 Shearing
Reference Book	1. Computer Graphics - second edition, Donald Hearn & M. Pauline Baker – Tata McGraw Hill Pub. 2. Computer Graphics, Harrington S. -Tata McGraw Hill. 3. Computer Graphics, Desai A. A. –PHI. 4. Computer Graphics: Algorithms & Implementations, Mukherjee & Jana – PHI. 5. Interactive Computer Graphics, Giloi W. K. –Prentice Hall India. 6. Principles of Interactive Computer Graphics, New Man W. & Sproul P. F. –McGraw Hill 7. Procedural Elements for Computer Graphics, Rogers D. F. – McGraw Hill.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.