

Course: 601 : Computer Graphics

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| Course Code | 601 |
| Course Title | Computer Graphics |
| Credit | 4 |
| Teaching per Week | 4 Hrs |
| Minimum weeks per Semester | 15 (Including Class work, examination, preparation etc.) |
| Review / Revision | June 2016 |
| 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 also various processes on them. |
| Course Content | <p>Unit 1. Introduction</p> <ul style="list-style-type: none">1.1 Application areas of Graphics Systems<ul style="list-style-type: none">1.1.1. Presentation Graphics1.1.2. Entertainment1.1.3. Education and Training1.1.4. Image Processing1.2 Computer Graphics Files1.3 Introduction to graphic standards <p>Unit 2. Graphics Systems</p> <ul style="list-style-type: none">2.1. Video Display Devices<ul style="list-style-type: none">2.1.1. Refresh CRT2.1.2. Color CRT2.1.3. LCD2.1.4. Direct View Storage Tube2.2. Raster scan and Random Scan Display2.3. Raster Graphics and Vector Graphics2.4. Concepts of various objects: Point, Line, Circle, Ellipse and Polygons <p>Unit 3. Line generation</p> <ul style="list-style-type: none">3.1. Geometry of line3.2. Frame Buffer3.3. Line Drawing Algorithms<ul style="list-style-type: none">3.3.1. DDA Algorithm3.3.2. VECGEN3.3.3. Bresenham3.4. Line Styles<ul style="list-style-type: none">3.4.1. Thick line3.4.2. Line caps and joint3.5. Anti-aliasing of line <p>Unit 4. Polygons</p> <ul style="list-style-type: none">4.1 Polygon Representation4.2 Polygon Inside Tests<ul style="list-style-type: none">4.2.1 Even-odd method4.2.2 Winding number method4.3 Polygon Area Filling Algorithm |

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| | 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. |