# JES, JHARSUGUDA

## Lesson Plan

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| Name | **SABYASACHI SARANGI** | Total Hrs planned:60<br>Total Hrs per week: 04 |
| Designation | PTGF | Pre requisite: Programming Using C |
| Subject: Code/Name | **CST-501** | **Computer Graphics & Multimedia** |
| **Semester/Programme/ Department** | 5th Semester/ Diploma/ Information Technology | |
| **Course Objective** | **After completion of this course the student will be able to:**<br>Graphics and Multimedia-now a day probably the most talked about technology in the field of computer. This technology is nowadays largely adopted by most computer-based applications to bridge the gap between a human user & the computer. By this, multiple media are implemented and used in computer-based application to enhance their understanding ability before a common man. These multiple media include text, sound, video, graphics animation etc. This paper will expense the students to the various concepts of these media and their implementation in computer-based application. This will also expose the students to various multimedia implementation techniques like data compression, & various multimedia standards. | |

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| Sl. No | Detail Description of Topics/Subtopics | Mode of Lecture | References (Text Book and reference book Page No___to____) |
|---|---|---|---|
| 1 | **Chapter1:** Introduction to applications of Computer Graphics & Multimedia | Chalk & talk | TB1: 2 |
| 2 | Computer graphics in CAD | PPT | TB1: 4,5 |
| 3 | Presentation Graphics | Chalk & talk | TB1: 11,12 |
| 4 | Computer Art & Entertainment | Chalk & talk | TB1: 13 to 18 |
| 5 | Education & Training, Visualization | Chalk & talk | TB1: 21 to 25 |
| 6 | Image Processing & Graphic User Interface | Chalk & talk | TB1: 32 to 34 |
| 7 | Concept of Multimedia | Chalk & talk | TB2: 5,6 |
| 8 | Revision of Chapter1 | Questionaries | |
| 6 | **Chapter2:** Introduction to Overview of Graphics System | PPT | TB1: 35 |
| 7 | Graphics System | Chalk & talk | TB1: 36,37 |
| 8 | Raster Scan Display & Random Scan Display | Chalk & talk | TB1: 40,41 |
| 9 | Graphics Input Devices | Chalk & talk | TB1: 60 to 70 |
| 10 | Graphics Software | PPT | TB1: 75 |
| 11 | Revision of Chapter 2 | Questionaries | |
| 16 | **Chapter3:** Introduction to Graphics Output primitive | Chalk & talk | TB1: 83 |
| 17 | Points & Lines | Chalk & talk | TB1: 84 |
| 18 | DDA Line Drawing Algorithm | Chalk & talk | TB1: 86, 87 |
| 19 | Bresenham's Line drawing Algorithm | Chalk & talk | TB1: 88 |
| 20 | Filled Area Primitives | Chalk & talk | TB1: 117 |
| 21 | Boundary fill algorithm, Flood fill algorithm | Chalk & talk | TB1: 127 to 130 |
| 22 | Revision of Chapter 3 | Questionaries | |
| 23 | Revision of Chapter1 to 3 | Quiz | |

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| 24 | **Chapter4:** Two Dimensional Geometric Transformations | PPT | TB1: 184 |
| 25 | Translation | Chalk & talk | TB1: 184 |
| 26 | Rotation | Chalk & talk | TB1: 184 |
| 27 | Scaling | Chalk & talk | TB1: 184 |
| 28 | Reflection | Chalk & talk | TB1:201 |
| 29 | Shear | Chalk & talk | TB1:203 |
| 30 | Matrix representation and Homogenous coordinate system | Chalk & talk | TB1:188 |
| 31 | Composite transformation | Chalk & talk | TB1:191 to 194 |
| 32 | Revision of Chapter 4 | Questionaries | |
| 33 | **Chapter5:** Two-Dimensional Viewing | Chalk & talk | TB1: 216 |
| 34 | Viewing pipeline | Chalk & talk | TB1: 217 |
| 35 | Viewing coordinate reference frame | Chalk & talk | TB1: 219 |
| 36 | Window to view port coordinate transformation | Chalk & talk | TB1: 220 |
| 37 | Line clipping concept | Chalk & talk | TB1: 225,226 |
| 38 | Polygon clipping concept | PPT | TB1: 237, 238 |
| 39 | Revision of Chapter 5 | Questionaries | |
| 40 | **Chapter6:** Three-Dimensional Object Representations | Chalk & talk | TB1: 304 |
| 41 | Polygon surface & Table | PPT | TB1:305, 306 |
| 42 | Plane equation | Chalk & talk | TB1:307,308 |
| 43 | Polygon mesh | Chalk & talk | TB1:309 |
| 44 | Quadric surfaces | Chalk & talk | TB1: 310 |
| 45 | Sphere, Ellipsoid | PPT | TB1: 311 |
| 46 | Spline representation | Chalk & talk | TB1: 315 |
| 47 | Bezier curves & Surfaces | Chalk & talk | TB1: 327 to 329 |
| 48 | B-Spline curves & surfaces. | Chalk & talk | TB1: 334, 335 |
| 49 | Revision of Chapter 6 | Questionaries | |
| 50 | **Chapter7:** Three Dimensional Geometric | Chalk | TB1: 407 |

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| | & Modeling Transformations | & talk | |
| 51 | Translation, Rotation, Scaling, Reflection, Shear | PPT | TB1: 408 to 423 |
| 52 | Composite transformation | Chalk & talk | TB1: 423 |
| 53 | Modeling & Coordinate transformation. | Chalk & talk | TB1: 426 to 428 |
| 54 | Revision of Chapter 7 | Questionaries | |
| 55 | **Chapter8:** Three-Dimensional Viewing | Chalk & talk | TB1: 431 |
| 56 | Viewing pipeline | Chalk & talk | TB1: 432 |
| 57 | Viewing coordinates | Chalk & talk | TB1: 433 |
| 58 | Parallel projection & Perspective projection | Chalk & talk | TB1: 438 to 443 |
| 59 | Concept of 3D clipping. | PPT | TB1: 456 to 460 |
| 60 | Revision of Chapter 8 | Questionaries | |
| 61 | **Chapter 9:** Illumination Model & Surface Rendering Methods | Chalk & talk | TB1: 494 |
| 62 | Different light sources used in 3D Modeling | Chalk & talk | TB1: 496 |
| 63 | Basic Illumination model | PPT | TB1: 497 |
| 64 | Ambient light | Chalk & talk | TB1: 497 |
| 65 | Diffuse reflection & Specular reflection | Chalk & talk | TB1: 497 |
| 66 | Revision of Chapter 9 | Questionaries | |
| 67 | **Chapter 10:** Introduction to Digital Audio | PPT | TB2: 66 |
| 68 | Basics of Acoustics, Psychoacoustics | PPT | TB2: 66 |
| 69 | Musical sound and noise, elementary sound system | Chalk & talk | TB2: 66 to 68 |
| 70 | Microphones, Amplifiers, digital audio formats | Chalk & talk | TB2: 68 to 71 |
| 71 | Audio compression (LPC, Sub Band Encoding) | Chalk & talk | TB2: 72 to 75 |
| 72 | Revision of Chapter 10 | Questionaries | |
| 73 | **Chapter 11:** Introduction to Digital Image | PPT | TB2: 75 |
| 74 | Vector and raster Graphics | Chalk & talk | TB2: 75,76 |
| 75 | Digital representation of image, colour, 16-bit, 24-bit colour depth | Chalk & talk | TB2: 76,77 |

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| 76 | Colour Characteristics-Hue, saturation, Luminance & Colour Palette | Chalk & talk | TB2: 77 |
| 77 | Image formats-JPEG, BMP, TIFF, GIFF & Image evaluation | Chalk & talk | TB2: 77 to 82 |
| 78 | Layers & Filters | Chalk & talk | TB2: 82 to 84 |
| 79 | Image manipulation-scaling, cropping, rotation | Chalk & talk | TB2: 84 to 85 |
| 80 | Revision of Chapter 11 | Questionaries | |
| 81 | **Chapter 12:** Introduction to Video | PPT | TB2: 86 |
| 82 | Video in Multimedia | PPT | TB2: 86 |
| 83 | Basics of Motion-Video & Sources of Motion-Video | Chalk & talk | TB2: 86,87 |
| 84 | Video formats, lines, frames, fields | Chalk & talk | TB2: 87,88 |
| 85 | TV Broadcast standards-PAL, NTSC, SECAM | Chalk & talk | TB2: 88, 89 |
| 86 | MPEG Compression | Chalk & talk | TB2: 89 |
| 87 | Revision of Chapter 12 | Questionaries | |
| 88 | Problems and revision | Questionaries & Quiz | |

| ***Sl. No.*** | ***Name of Authors*** | ***Title of the Book*** | ***Name of the Publisher*** |
|---|---|---|---|
| TB1 | Donald Hearn, M.Pauline Baker | Computer Graphics | PHI |
| TB2 | Buford | Multimedia Systems | Pearson |
| TB3 | Jose Lozano | Multimedia: Sound and Video | PHI |
| TB4 | S.Pandey, M.Pandey | Multimedia Systems, Tech. & Communications | Katson |

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