# ACADEMIC LESSON PLAN 2021 (WINTER)

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| Discipline: Information Technology | Semester : 5th | Name of the Teaching faculty: Swetalina Das | |
| Subject : Computer Graphics and Multimedia | No.of Days/per week class allotted : 04 | Semester from date: 1/10/2021 to 8/1/2022<br>No. of weeks : 15 | |
| Week | Class Day | Theory / Practical Topics | Remark |
| 1st Week | 1st | Introduction to Computer Graphics<br>Applications of Computer Graphics & Multimedia<br>Computer graphics in CAD, Presentation Graphics, Computer Art, | |
| 2nd Week | 1st | Question Answer Discussion/Quiz | |
| | 2nd | Overview of Graphics System, Raster Scan Display | |
| | 3rd | Random Scan Display, Difference between Raster scan display and Random Scan Display | |
| | 4th | Graphics Input Devices used for graphics, Graphics Software. | |
| 3rd Week | 1st | PUJA VACATION | |
| | 2nd | | |
| | 3rd | | |
| | 4th | | |
| 4th Week | 1st | Question Answer Discussion/Quiz | |
| | 2nd | Graphics Output primitive - Points & Lines, DDA Line Drawing Algorithm | |
| | 3rd | | |
| | 4th | Examples of DDA Line Drawing Algorithm<br>Bresenham's Line drawing Algorithm | |
| 5th Week | 1st | Examples of Bresenham's Line drawing Algorithm | |
| | 2nd | Mid-Point Circle algorithm | |
| | 3rd | Filled Area Primitives | |
| | 4th | Boundary fill algorithm, Flood fill algorithm | |
| 6th Week | 1st | Question Answer Discussion/Quiz | |
| | 2nd | Definition of 2D Transformation, Types of 2D transformation, Translation, Rotation | |
| | 3rd | Scaling, Reflection, Shear | |
| | 4th | Matrix representation and Homogenous coordinate system, Composite transformation | |
| 7th Week | 1st | What is 2D viewing, viewing pipeline, viewing coordinate reference frame, Window to view port coordinate transformation | |
| | 2nd | What is Clipping, Line clipping concept, Polygon Clipping | |
| | 3rd | Question Answer Discussion/Quiz | |
| 8th Week | 1st | Three-Dimensional Object Representations<br>Polygon surface, Polygon table, Plane equation | |
| | 2nd | Polygon mesh, Quadric surfaces, Sphere | |
| | 3rd | Ellipsoid, Spline representation | |
| | 4th | Bezier curves & Surfaces | |
| 9th Week | 1st | B-Spline curves & surfaces | |

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| | 2nd | Question Answer Discussion/Quiz | |
| | 3rd | Three Dimensional Geometric & Modeling Transformations<br>Definition of 3D transformation, Its types, Translation, Rotation | |
| | 4th | Scaling, Reflection, Shear | |
| 10th Week | 1st | Composite transformation<br>Modeling & Coordinate transformation | |
| | 2nd | Three-Dimensional Viewing<br>Viewing pipeline, Viewing coordinates | |
| | 3rd | Parallel projection, Perspective projection | |
| | 4th | Differences between Parallel Projection and Perspective projection,<br>Concept of 3D clipping | |
| 11th Week | 1st | Different Types of 3D clipping | |
| | 2nd | Question Answer Discussion/Quiz | |
| | 3rd | Illumination Model & Surface Rendering Methods<br>Different light sources used in 3D modeling | |
| | 4th | Basic Illumination model, Ambient light, Diffuse reflection, Specular reflection | |
| 12th Week | 1st | Introduction to Digital Audio<br>Basics of Acoustics, Psychoacoustics, Musical sound and noise, elementary sound system, Microphones, | |
| | 2nd | Amplifiers, digital audio formats | |
| | 3rd | Audio compression ( LPC), Sub Band Encoding | |
| | 4th | Question Answer Discussion/Quiz | |
| 13th Week | 1st | Introduction to Digital Image<br>Vector and raster Graphics<br>Digital representation of image, | |
| | 2nd | colour, 16-bit, 24-bit colour depth<br>Colour Characteristics-Hue, saturation, Luminance, | |
| | 3rd | Colour Palette, Image formats- JPEG, BMP,TIFF, GIFF image format | |
| | 4th | Image evaluation, Layers, Filters | |
| 14th Week | 1st | Image manipulation-scaling, cropping, rotation | |
| | 2nd | Question Answer Discussion/Quiz | |
| | 3rd | Introduction to Video, Video in Multimedia<br>Basics of Motion-Video, Sources of Motion-Video | |
| | 4th | Video formats, lines, frames, fields | |
| 15th Week | 1st | TV Broadcast standards- PAL, NTSC, SECAM | |
| | 2nd | MPEG Compression | |
| | 3rd | Question Answer Discussion/Quiz | |
| | 4th | Doubt clearing, Last year questions discussion | |

Signature of Faculty