


CS421: Computer Graphics

Semester Schedule



Event	Date
Class Start	Week 1
First Quiz	Week 3
2nd Quiz	Week 4
Mid-Term Exam	Announced by DIU
Third Quiz	Week 7
Assignment Submission	Week 8
Presentation	Week 9
Final Exam	Announced by DIU

Our Classes:

Weekly as per routine



Marks Distribution

- Full Marks: **100**
 - Attendance: **7**
 - Quiz: **15**
 - Assignment: **5**
 - Presentation: **8**
 - Mid-Term: **25**
 - Final: **40**
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- Today Full **100** marks are given to all.
 - Now it is your time to set your final marks and Grade

CSE421: Computer Graphics

Course Teacher: Professor Dr. Md. Ismail Jabiullah

Objectives: An introduction to computer graphics hardware, algorithms and software. Line generators, transformations, line and polygon clipping, splines, interactive techniques, perspective projection, hidden surface algorithms, lighting models, shading, and animation.

Detail Course Outline (Theory)

Week 1: Chapter 1

1.1 Introduction: A Survey of Computer Graphics

1.2 Definition

1.3 Application of Computer Graphics

Chapter 2

2.1 Overview of Graphics System

2.2 Video Display Devices: Refresh Cathode Ray Tubes

2.3 Raster Scan Displays

2.4 Random-Scan Displays

2.5 Color CRT Monitors

2.4.1 Beam-Penetration Method

2.4.2 Shadow-Mask Method

2.6 Direct-View Storage Tubes

2.7 Flat-Panel Displays

2.7.1 Plasma Panel Displays

2.7.2 Thin-Film Electroluminescent Display

2.7.3 LED Display

2.7.4 LCD Display

Week 2: Chapter 3

3.1 Points and Lines

3.2 Line Drawing Algorithm

3.3 DDA Algorithm

3.4 Bresenham's Line Algorithm
Parameter Description
Algorithm and Example

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Week 3:

Chapter 3

3.5 Circle Generating Algorithm

3.6 Properties of Circle

3.7 Midpoint Circle Algorithm

Parameter Description

Algorithm and Example

Week 4:

Chapter 5

5.1 Two-Dimensional Geometric Transformation

5.2 Basic Transformation

Translations , Rotation, Scaling

Reflection, Shear,

Week 5:

Chapter 11

5.1 Three-Dimensional Geometric Transformation

5.2 Basic Transformation

Translations , Rotation, Scaling

Reflection, Shear

Week 6:

Chapter 6

6.1 Two-Dimensional Viewing

6.2 Window-to-Viewport Coordinate Transformation

6.3 Two-Dimensional Clipping

6.4 Clipping Operations

Point Clipping, Line Clipping, Polygon Clipping

Curve Clipping, Text Clipping

6.5 Cohen-Sutherland Line Clipping Algorithm

6.6 Polygon Clipping

6.7 Sutherland- Hodgeman Polygon Clipping Algorithm

6.8 Weiler-Atherton Polygon Clipping Algorithm

Week 7:

Chapter 9

9.1 Three Dimensional Concepts

9.2 Three Dimensional Display Methods

Parallel Projection, Perspective projection

Depth Cueing, Visible Line and Surface Identification

Surface Rendering

Week 8:

Chapter 10

10.1 Bezier Curves

10.2 Spline Curves

B splines curves, Beta splines curves

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Chapter 13:

- 13.1 Hidden surface algorithm
- 13.2 Classification of visible surface detection algorithm
- 13.3 Depth- Buffer algorithm

Week 9:

Chapter 14

- 14.1 Lighting Model
- 14.2 Light Sources
- 14.3 Basic Illumination Models
 - Ambient Light, Diffuse Reflection
- 14.4 Intensity Attenuation

Week 10:

Chapter 14

- 14.5 Halftone Pattern and Dithering Techniques
- 14.6 Halftone Approximation
- 14.7 Dithering Techniques

Week 11:

Chapter 15

- 15.1 Color Models and Color Applications
- 15.2 Properties of Light
- 15.3 Standard Primaries and the Chromaticity Diagram
- 15.4 Intuitive Color Concepts
- 15.5 RGB Color Model
- 15.6 CMY Color Model

Week 12:

Chapter 16

- 16.1 Computer Animation: Design of Animation Sequences
- 16.2 General Computer Animation Functions
- 16.3 Raster Animations
- 16.4 Motion Specification

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Class Test 1

Class Test 2

Class Test 3

Mid-term Exam

Presentation

Final Exam

Book List

Text Books:

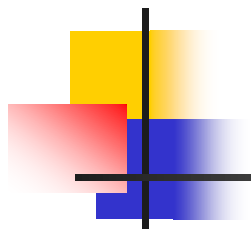
Computer Graphics, by Donald Hearn, M. Pauline Baker

Reference Books:

- Schaum's Outline of Computer Graphics: By [Ray Plastock](#), [Gordon Kalley](#), [Zhiang Xiang](#), [Zhingang Xiang](#)
- C Programming Using Turbo C++: By Robert Lafore

Important notes:

1. The class tests will be held on due class and extra exam will not be taken.
2. Every students should collect their Assignment from course teacher in due date.
3. Three class tests will be taken. And the average of all three tests will be considered.
4. The syllabus of the final examination should include the topics covered after the Mid-Term examination and will also include at least 30% of the Mid-Term syllabus.



Thank you