Course Outline

Course Name : Computer Graphics (0306354)

Prerequisite Course: Data Structures (0306250)

Lecturer Name: Salah F. Saleh.

Lecturer Office Number: 217D

Lecture Time: 1:00 – 2:00 (Sun, Tue, Thu)

Office Hours: 12:30 – 2:00 (Mon, Wed)

Intended Learning Outcomes (ILOs):
1. Student will has skills of using mathematical methods in CS problems.
2. Student will has skills of formal methods and description techniques.
3. Student will has knowledge about the algorithms of drawing and viewing.

Contents Outline:

Subject	Hours
1. Introduction Computer Aided Design, Presentation Graphics, Computer Art, Entertainment, Education and Training, Visualization, Image Processing, Graphical User Interface.	2
2. Overview of Graphics Systems. Video Display Devices, Input Devices, Hard Copy Devices, Graphics Software.	3
3. Drawing Primitives and Algorithms. Points and Lines, Line Drawing Algorithms, Circle Generating Algorithms, Ellipse Generating Algorithms, Other Curves, Parallel Curve Algorithms, Pixel Addressing, Filled Area Primitives, Character Generation.	10
4. Two Dimensional Geometric Transformations. Basic Transformation, Matrix Representation, Composite Transformations, Other Transformations, Transformations Between Coordinate System, Affine Transformations, Transformation Functions, Raster Methods for Transformation.	6
5. Two Dimensional Viewing. The Viewing Pipeline, Viewing Coordinate Reference Frame, Window-to-Viewport Coordinate Transformation, Clipping Operations, Point Clipping, Line Clipping, Polygon Clipping, Curve Clipping, Text Clipping, Exterior Clipping.	6

7. Three Dimensional Concepts and Viewing Three Dimensional Display Methods, Viewing Pipeline, Viewing Coordinates Projections, View Volumes and General Projection Transformations, Clipping, Hardware Implementations, Three Dimensional Viewing Functions.	9
6. Computer Animation. Design of Animation Sequences, General Computer-Animation Functions, Raster Animations, Computer Animation Languages, Motion Specifications.	3

Text Book:

- Donald Hearn and M. Pauline Baker, "Computer Graphics, C version", 2nd edition, Prentice Hall, New Jersey, 1997.

Useful References:

1. Peter Cooley, "The Essence of Computer Graphics", Pearson Education, 2001.
2. Leendert Ammeraal, "Programming principles in Computer Graphics", 2nd edition, New York, John Wiley, 1994.
3. Loren Heiney, "Advanced Graphics Programming using C/C++", New York, John Wiley, 1993.

Teaching Methods:

- Lectures
- Lab Assignments.
- Project.
- Tutorial

Assessment:

- First Exam: 15
- Second Exam   15
- Homework & Quizzes   10
- Project   10
- Final   50

Important Dates:

- Project Registration Deadline: 1/4/2004.
- Project Submitting Deadline : 13/5/2004.
- Project Discussion Period   : 16 – 18 /5/2004.

Good Luck