Department of Computer Engineering	
Computer Graphics (66418)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Object Oriented Programming (66212)

Course Contents

A survey of computer graphics, graphics systems, Output primitives, Attributes of output primitives, Two-dimensional geometric transformation, Two-dimensional viewing, Three-dimensional transformations , modeling, rendering and some Applications: 3DMAX 9 and OPENGL using C++ or C#

Intended Learning Outcomes (ILO's)		Student Outcomes (SO's)	Contribution
1	Apply knowledge of principles of computer graphics (vector and raster), basic operations in 2D and 3D, methods and algorithms for rasterization of lines, circles and curves, filling of closed areas, methods and algorithms for transformations, visibility solving, lighting, shading, graphics animation and texturing graphics to solve graphics and engineering problems	A C E K	70 %
2	Use the graphics software package such as Open GL to build and design 2D and 3D object models and to solve graphics problems	C E K	20 %
3	Use modern graphics tools such as 3DMAX to implement 2D and 3D graphics primitives and geometrical transformations and to design and present consumer products	C E K	10 %

Textbook and/ or Refrences

Computer Graphics with OpenGL by Donald Hearn and M. Pauline Baker- 3rd edition-2004

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Homeworks	5 %
Projects	15 %
Final Exam	40 %

Course Plan

Week	Topic
1	A survey of computer graphics , Computer-aided design, Education and training and Graphics user interface
2- 3	Overview of graphics systems : Video display devices: raster-scan &random scan, Input devices and Graphics software
4- 6	Output primitives : Pointes and lines operations, Line algorithms, Circle generation algorithms, Polygon operations and Polygon filling
6	First Exam
7	Labs on 3DMAX
8	Attributes of output primitives: Line, Curve, Character attributes and Anti aliasing
9- 10	Two-dimensional geometric transformation: 1- Basic transformations: rotation, scaling, and translation, Matrix representation and Homogenous coordinate systems, 2- Composite transformations and Other transformations: reflection and shear

11-12	Three-dimensional transformations: Translations, Rotations, Scaling, reflection and shearing
12	Second Exam
13-14	Two-dimensional viewing : Window to view port coordinate transformations, Two-dimensional viewing functions and Clipping operations: line, point, polygon, and text
15	Discussion of projects
16	Final Exam