Computer Graphics Course Specifications

Course Specifications

Faculty: Computer and Informatics

Department: Scientific computing

Course Specifications

Program(s) on which the course is given : Bachelor in Computer and Information Sciences

Major or Minor element of programs : Scientific Computing/Computer Science

Department offering the program : Computer Science

Department offering the course : Computer Science

Academic year / Level : 3rd Year / B.Sc.

Date of specification approval : 5 March 2010

A. Basic Information

Title: Computer Graphics **Code:** SCC 342

Lecture: 3 hrs/week **Practical: 2** hrs/week **Tutorial: ---**

Total: 5 hrs/week

B. Professional Information

1. Overall Aims of Course:

At the end of this course, students should have an understanding of the principles and practice of two-dimensional and three-dimensional computer graphics.

2. Intended Learning Outcomes of Course (ILOs):

a. Knowledge & understanding :

a1- Explain and illustrate two-dimensional and three-dimensional computer graphics techniques; coordinate transformations; drawing curves and surfaces; shading & lighting models; graphics devices; animation techniques; ray tracing; virtual reality; object-oriented approaches to computer graphics.

b. Intellectual skills:

b1- Integrate spatial reasoning and problem-solving.

b2- Integerate objects in 2D and 3D space using coordinate transformations.

c. Practical skills:

c1- Design and draw two-dimensional graphics objects in OpenGL in C++.

c2- Design and draw basic three-dimensional scenes in OpenGL in C++.

d. Transferable skills:

d1- Present solutions to problems and evaluate alternatives.

d2- Discuss symbolic techniques to

spatial problems.

e. Attitude:

e1-Demonstrate an ethical behavior toward software copyrights

e2- Relationship Emphasis a successful with other students.

3. Contents:

Topic	No. of hours	Lecture	Tutorial/ Practical
Quick Review: Two-dimensional graphics	5	3	2
Mathematics for 3D Graphics	5	3	2
Geometric Primitives.	5	3	2
3D-Affine transformations (rotating, translating, scaling)	5	3	2
3D Clipping.	5	3	2
Parallel Projection (Introduction to Camera Model)	5	3	2
Perspective Projection (3D)	5	3	2
Curves and surfaces, Bezier, Splines.	5	3	2
Hidden line and surface removal	5	3	2
Illumination models (ambient, diffuse, specular)	5	3	2
Shading models (flat, Phong, Gouraud)-	5	3	2
Texture Mapping.	5	3	2
Loading 3D Models.	5	3	2
Quick Review: Two-dimensional graphics	5	3	2