COURSE NUMBER AND TITLE:
    cap5705 Computer Graphics

OVERVIEW:
This is an introductory graduate-level course on
the concepts and principles underlying
interactive gaming and graphics environments.

The goal is to be able to build, not just use
such environments, inluding the lighting and modeling of geometry.
To make the concepts and principles concrete and
prepare students for the workplace or graduate studies,
the course uses the industry-standards of OpenGL and C/C++.
In particular, students are expected to work with,
understand and modify OpenGL example programs.
Students will also benefit from refreshing their knowledge
of linear algebra and calculus to understand structures
rather than just examples.

PREREQUISITES:
Familiarity with programming using a high-level language;
familiarity with OpenGL is not assumed;
basic knowledge of algorithms, data structures and discrete math.
Understanding matrix operations, curves and surfaces.

TEXTBOOK:
class notes

OUTLINE OF COURSE TOPICS:

Introduction & test
OpenGL
Curves
Interaction
Test 1, Discussion

polyhedra + basic geometry
3D data structures
basic 3D viewing, coordinates
Modeling Hierarchy
Projection
Test 2, Discussion

Surfaces
Textures
Z-buffer & Smooth shading
Graphics Pipeline
(shape grammars, Contouring & Voxels)
Test 3, Discussion
fractals, particles

EXAMINATIONS AND GRADES:
tests (50% of final grade)
projects (50% of final grade)
Homework assignments in the early part of the course.

WORKLOAD: Students who take this course comment that the course
uses (and motivates) earlier CS and Math course work (see prerequisits).