**CmpE 460 Introduction to Computer Graphics**

This is an introductory course on Computer Graphics with no prerequisites. Computer Graphics deals with the synthesis of images from geometric models and textures; which may be acquired form the real world or may be synthetically generated as well. The course will focus on modeling; which is the geometric description of 3D scenes; and rendering, which creates realistic images from such models. An important component of the course is the use of mathematics. The course uses linear algebra, and other areas of math. We will review mathematical basics used in the course. Programming experience in C++ and a basic knowledge of calculus and linear algebra is assumed. Apart from the lecture topics listed below, some OpenGL programming will also be covered.

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**Lecture Hours:** TTW232BM A5

**Textbook:** Fundamentals of Computer Graphics, by Marschner and Shirley.

* Overview of graphics systems; applications; hardware
* Ray tracing
* Graphics and raster graphics algorithms for drawing in 2D
* Geometrical transformations in 2D and 3D
* Viewing in 3D
* Color and shading
* Visible surface determination
* Illumination and shading
* Modeling curves: implicit,explicit and parametric; emphasis on cubic polynomials
* Surface modeling: Bicubic Bezier polynomials
* Introduction to more advanced topics and applications

**Grading:** There will be programming assignments every 2 weeks. These will constitute one third of the grade. One third will be a midterm and the last third, a final exam.