

Welcome to
CS 4/57101 Computer Graphics

Goal:

The goal of this course is to provide an introduction to the theory and practice of computer graphics.

The course will assume a good background in programming in C++ and a background in mathematics including familiarity with the theory and use of coordinate geometry and of linear algebra such as matrix multiplication.

Students will use the standards based OpenGL library in several programming projects illustrating the theory and practice of programming computer graphics applications.

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Lecture 1

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Directions in Computer Graphics

- Plotting
- Interactivity
- Real-Time Manipulation
- Image-Realism (Photorealistic rendering)
- Real-Time Rendering
- Scientific Visualization

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Computer Graphics - Systems Programming?

■ **Characteristics:**

- dynamic environment
 - | time sensitive
- interactive environment
 - | creator
 - | user
 - | timing issues
- simulation environment
- visualization environment

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Components of Computer Graphics

■ **Modeling:**

- Defining objects in terms of primitives, coordinates and characteristics

■ **Storing:**

- storing scenes and images in memory and on disk

■ **Manipulating:**

- changing the shape, position and characteristics of objects

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Components of Computer Graphics

■ **Rendering:**

- applying physically based procedures to generate (photorealistic) images from scenes (using lighting and shading)

■ **Viewing:**

- displaying images from various viewpoints on various devices

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