

# CMSC 435/634: Introduction to Computer Graphics

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## Background

- ▶ Prerequisites
  - ▶ Math 211 (Linear Algebra)
  - ▶ CMSC 341 (Data Structures)
- ▶ Text
  - ▶ Fundamentals of Computer Graphics, Peter Shirley
  - ▶ Several others on reserve in the library
  - ▶ Read **BEFORE** class; ask questions!
  - ▶ Class will cover a subset of the listed chapters, but you are expected to know it all!

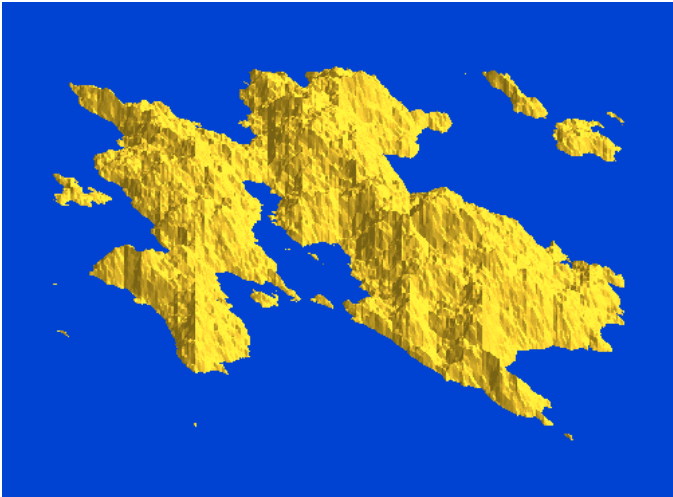
## What is Graphics?

- ▶ Making pictures with computers?
- ▶ Making pictures with math?
- ▶ Making pictures with physics?

## Real-time vs. Off-line

- ▶ Real-time/interactive
  - ▶ 10–60 frames per second
  - ▶ Games, interfaces, visual simulation...
- ▶ Offline/production
  - ▶ Seconds to hours per frame
  - ▶ Movies, architectural lighting simulation, ...

# Real-time



## Production



Toy Story, Pixar

## Realistic vs. Artistic

- ▶ Realistic/Photorealistic
  - ▶ Look like real life
    - ▶ Simulate physics
    - ▶ Reasonable appearing approximation
- ▶ Artistic/Non-Photo-Realistic
  - ▶ Look like what an artist might produce
    - ▶ Model artist's process, physics
    - ▶ Do what looks right (an art in itself)

## Realistic



Norbert Kern, POV-Ray Hall of Fame Gallery



## Artistic



Bruce & Amy Gooch, *Non-Photorealistic Rendering*