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Office hours:
1:00 M W Th F
By Appointment:
11:30 M W Th F
4:00 M W Th

CS446 Computer Graphics

Prerequisites:

It is strongly recommended that you have a strong background in either programming (CS222) or analytic geometry (MA115 – MA161). If you have neither, this course may well be ‘too much’.

Text: *none*

I have not found a text that I feel presents most of the topics in this course in a manner accessible to most students. I will be handing out my own materials. Regular class attendance and participation is strongly recommended since the handed out materials can be expected to contain only an outline of what is discussed in class.

Supplies:

A computer with a Java programming environment.

General Information:

This course is primarily a course in computer graphic programming technique. We will look at algorithm design and write our own algorithms. These is not a course in using pre-written computer graphics procedures. The emphasis will be on how such procedures are written.

A tentative outline of course topics appears on the back of this page.

The exact nature of the grading criteria is not yet certain. There will be programs to write — these may be the only graded assignments.

Physical Disabilities:

I will help you as I can, be sure to ask!

The Coordinator of Disability Services is in the Disability Services Office, room 1104 in the University Center. The phone number is 227-1737 (TTY 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

I Coordinate Systems & Dimensions

- Device Coordinates
- Normalized Device Coordinates (NDC)
- World Coordinates

- Viewports
- Windows

II Vector Graphics

- Parametric Curves
- “Turtle Graphics”
- Recursive Fractal Images

III Transformations (of points and of functions)

- Translation, Rotation, & Magnification
- Hierarchy of transformations

IV Hidden Surfaces

- By checking the direction of a normal
- Using the “Painters Algorithm”

V Z-buffer Images

- Spheres
- Triangles
- Scaling

VI Shading

- Diffuse shading
- ‘Metallic’ shading

VII Mandelbrot & Julia Sets

- Divergence
- Convergence
- Orbits

VIII Ray Traced Images

- Quadratic Surfaces
- “Boxes”
- Shadows
- Reflection
- Refraction
- Triangles
 - Barycentric Coordinates
 - Phong Shading