

CS 402 Graphics  
Fall 2005

**Objectives:** Students will study various aspects of computer graphics, including fundamentals of hardware and software, special algorithms for rendering, animations, and mathematics for supporting graphics programs.

**Text:** **Interactive Computer Graphics** by Edward Angel

**Meeting Time:** MWF 12:30 – 1:20

**Grading:**

announced quizzes	25%
homework	15%
class participation	5%
projects	35%
final exam	20%

**Instructor:**

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The schedule may change depending on choices of material. Students may choose whether they want to use java or C++ for writing their programs. There are webpages available with tutorials for either. All documentation for OpenGL is available free online as is that for glut.

The first week in October we will have a look at Maya as another example of a high level graphics tool.

## Tentative Schedule

Week	Topics	Chapters to Read
August 29	Fundamentals of Graphics	1 and pages 343-348
September 5	Using OpenGL	OpenGL webpage and tutorials Or gogl using java
12	Color, points, lines, and polygons	2
19	vectors, parallel and intersecting lines	
26	affine transformations : translations, rotations, reflections, shears, scaling	4
October 3	Maya	
10	I/O devices and modes	
17	Viewing: orthographic projections axonometric and oblique projections perspective views	5
24	mathematics of viewing	
31	Shading: light source,	6
November 7	surfaces, shadows, ray tracing	
14	algorithms for clipping	7
28	scan line algorithm	
December 5	project presentations	

## Project Requirements

Students may work alone or with one other student to complete a project.

Each project must incorporate mathematical ideas of graphics, graphics algorithms, and the use of OpenGL to achieve a defined goal.

Each project should include ideas from the following categories:

1. matrices
2. shading
3. 3D images
4. clipping
5. hidden surface removal
6. color
7. animation
8. event driven graphics
9. model design
10. something new (examples: curves, special data structures, composition, new algorithms, ... )

Each project should include documentation that describes the project goal, explains how the goal has been achieved, and points out how each of the 10 requirements has been met.

During the week of December 3, the projects will be presented.