# Computer Graphics

CS 320
Spring 2005

**Instructor:** Thomas P. Kelliher
Hoffberger 140
Office phone: (410) 337-6189
Home phone: (410) 931-2946
Send e-mail to kelliher AT DOMAIN goucher.edu
`http://phoenix.goucher.edu/~kelliher`
Office hours: MWF 10:30–11:20am. Th 1:30–3:00pm. Other times by appointment.

**Class:** Hoffberger 149
MWF 1:30–2:20pm
`http://phoenix.goucher.edu/~kelliher/s2005/cs320/`

**Objectives:** Our major objective is to do some interesting interactive 3-D graphics programming in the OpenGL API using Visual C++ on Windows. We'll take a top-down approach. Specific objectives:

1. Introduction to elements of computer graphics: hardware, algorithms, APIs, applications.
2. 3-D graphics in OpenGL.
3. Appreciate how computer graphics builds on and connects to all the computer science you've already learned.
4. Study some advanced CG topics (physics, lighting, etc.)

**Textbooks:**

1. E. Angel, *Interactive Computer Graphics: A Top-Down Approach Using OpenGL*, 3rd ed. Addison Wesley, 2003. Required.
2. E. Angel, *OpenGL: A Primer*, 2nd ed. Addison Wesley, 2005. Optional.
3. M. Woo, et. al., "OpenGL Programming Guide: The Official Guide to Learning OpenGL, Version 1.2," 3rd ed. Addison Wesley, 1999. Optional, not available in College bookstore.
4. S. P. Harbison and G. L. Steele, Jr., "C: A Reference Manual," 5th ed. Prentice Hall, 2002. Optional, not available in College bookstore.

**Other Resources:**

OpenGL and other documentation and example programs will be made available through links to Web sites, man pages on phoenix, and file repositories on phoenix.

**Grading:**

**Grade Distribution**

A = [92%–100%], A- = [90%–92%), B+ = [88%–90%), B = [82%–88%), B- = [80%–82%), etc. Grades are "one point rounded."

**Course Point Distribution**

The following is tentative. There are 600 total points for the course.

1. Projects — There will be three or four projects during the semester. Projects will be worth a total of 300 points.
2. Term project — The term project will be worth 150 points. It will be due and presented at the "final."
3. Exam — There will be one midterm, worth 150 points. Tentatively, the midterm will be April 13.

**Course Handouts:**

Most course handouts will be made available once in class. After that, they may be obtained from the class home page on the World Wide Web (see the class URL above). Some course handouts will only be distributed through the class home page.

**Participation:** Attendance of classes, while not required, is quite important. Attendance and participation are necessary learning components. Please inform me beforehand if you will be absent. Remember that you are responsible for making up missed work.

**Electronic Communication:**

From time-to-time, I will need to send e-mail messages to the class. These messages will be addressed to your official Goucher e-mail addresses. You are responsible for checking your e-mail on a timely basis.

**Distractions:** Cell phones must be turned off or set to "silent" during class. If you must enter late, do so as unobtrusively as possible. Likewise if you must leave early. Please use mental telepathy if you must hold a personal conference during class. I have ways of making you not talk!

**Integrity:** Academic dishonesty will not be tolerated. We are all bound by the Academic Honor Code.

**Tentative Outline:**

1. Introduction.
2. OpenGL.
3. Color.
4. Input.
5. Geometric Transformations.
6. 3-D Graphics.
7. Rendering.
8. Modeling.
9. Algorithms.
10. Advanced topics.