Computer Graphics

CS 320
Spring 2009

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Class: Hoffberger 149
MWF 2:30–3:20pm
`http://phoenix.goucher.edu/~kelliher/s2009/cs320/`

Objectives: Our major objective is to do some interesting interactive 3-D graphics programming in the OpenGL API using Eclipse 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*, 5th ed. Addison Wesley, 2009. Required.
2. E. Angel, *OpenGL: A Primer*, 3rd ed. Addison Wesley, 2008. Optional.
3. OpenGL Architecture Review Board, et. al., *OpenGL Programming Guide: The Official Guide to Learning OpenGL, Version 1.2*, 6th ed. Addison Wesley, 2008. 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 650 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," scheduled for May 11 at 3:00 pm.
3. Semester exams — There will be two exams, each worth 100 points. Tentatively, the exams will be March 6 and April 24.

Course Handouts:

Course handouts may be made available once in class. They may always be obtained from 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.