

UNIVERSITY OF CALIFORNIA

College of Engineering, Department of Electrical Engineering and Computer Sciences

Computer Science Division: Spring 2004 CS-184 *Foundations of Computer Graphics*

Professor: James O'Brien

T.A.'s: Tolga Goktekin and Roger Bock

General Information

This course provides an overview of software and hardware systems for computer graphics including design factors related to human interaction, color perception and other ergonomic considerations. Emphasis is placed on understanding the principles underlying interactive computer graphics: basic software needs, the hierarchical structure of graphics software from low-level device dependent drivers to high-level 3-D modeling systems incorporating rotation, scaling, translation, perspective, 2-D and 3-D clipping, and color shading. More advanced topics include current hardware, visible surface algorithms, reflectance models, anti-aliasing techniques, and mathematical techniques for curve and surface representation. Slides, video tapes and films showing actual systems in use supplement the lecture material.

CS-184 Instructional Staff

	Office	E-Mail	Hours
Prof. O'Brien	Soda 633	job@eecs.berkeley.edu	M 4-5:30
Tolga Goktekin	Soda 511	goktekin@eecs.berkeley.edu	Tu+Fr 1-2
Roger Bock	Soda TBA	bock@eecs.berkeley.edu	We 1:30-2:30 + 4-5

Class/Section Locations and Times

	Location	Days	Time
Lectures	Soda 306	Mon. and Wed.	2:30pm-4:00pm
Section (Tolga)	Soda 405	Thursday	9:00am-10:00am
Section (Roger)	Soda 405	Thursday	10:00am-11:00am
Section (Roger)	Soda 320	Thursday	11:00am-12:00pm
Section (Tolga)	Soda 320	Thursday	2:00pm-3:00pm

Grading

Grading will be done using a point system. Each assignment, test question, and so on will be worth some number of points. Your final grade will be determined by the number of total point you earned. The conversion to letter grade will be done according to a “curve,” so your grade will depend on how you do relative to other students. If everyone does well on an absolute scale then the curve will be adjusted upward. If everyone slacks off, then the curve will be adjusted downward.

You can expect that the points will equate to something *roughly* like:

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|---------------|-----|
| • Assignments | 30% |
| • Project | 30% |
| • Midterm | 20% |
| • final | 20% |

Prerequisites

A data structures course (*e.g.*, CS 60C), C/C++ programming ability, and knowledge of linear algebra, calculus, and trigonometry. The first homework should be easy. If you find it baffling, you may have a problem and should consult the instructor.

This course has a reputation for somewhat demanding project work. You have been warned, no whining allowed.

Assignments

You will have a couple of written assignments which will exercise your knowledge of the theoretical basis of computer graphics. They will also be good preparation for the exams. You may discuss problems with your colleagues but all work must be strictly your own. Please note that we were not able to hire psychic readers: if your a written assignment (or exam answer!) cannot be read it will not receive points. Written assignment should be turned in at the CS-184 drop-box in 283 Soda

Programming assignments must compile and run on the instructional machines. It is your responsibility to make sure that they do. The first time you have a compile/run problem the grader has the option of allowing you to correct the problem. After the first time, the assignment may not be graded.

Early assignments must be done individually with no collaboration. Many other assignments should be performed in pairs. Of course, you may choose to work alone. Each assignment will clearly indicate whether you may work in pairs or must work alone. If you work in a pair you only need to hand in one copy of any documentation required, but make sure that you indicate clearly who was included in the pair. If you work in a pair make sure that you think carefully about how you are going to divide up the programming effort between you so that you can coordinate your

efforts without too much conflict.

I am generally happy for people to use code or ideas that they did not create themselves, but you have an absolute obligation to declare that this has happened, and to declare what you did. If you don't tell us anything, then we'll assume that you are presenting work as your own work. Presenting other peoples' work as your own is academic dishonesty. Collective responsibility applies: if you work in a pair, both of you will be held responsible for the resulting project. If it comes from a shady source, or does something horrible, the claim that it is all your partners fault will not be accepted as a defense.

Instructions for turning in the assignment will be included with each assignment and may vary over the semester. Read them carefully.

Late assignments will be penalized 10% of their value plus an additional 20% for each 24 hour period that elapses before you turn them in. Example: An assignment due Monday at 1pm, turned in Monday at 1:01pm loses 10%, Tuesday at 1pm still loses 10%, and Tuesday at 1:01pm loses 30%.

Text Books

Required Textbook

- D. Hearn, M. Baker. Computer Graphics with OpenGL, 3rd Edition

Other Useful Textbooks:

- J. Foley, A. van Dam, S. Feiner, J. Hughes. Computer Graphics: Principles and Practice, 2nd Edition
- P. Shirley. Fundamentals of Computer Graphics
- A. Watt. 3D Computer Graphics, 3rd Edition

Communication

You are responsible for reading the newsgroup `ucb.class.cs184` — all bug announcements and fixes for assignments and lectures will be distributed there. Routine communication about the course should be sent to `cs184@imail.eecs.berkeley.edu` or posted to the news group.

Dire Warning

Teaching a class to people who sit quietly is boring for the instructor. People who participate tend to learn more. So we would like to encourage class participation. If people appear to be interested and willing to participate then great, if not then we reserve the right to start giving really annoying little quizzes every class.