

# CS 445: Computer Graphics

Fall 2006

<http://www.cs.virginia.edu/~cs445>

## Instructor

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## Teaching Assistant

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**Description:** This course teaches the fundamental mathematics, algorithms, techniques, and programming skills for 2D and 3D graphics. Students will be well prepared to take any of the advanced courses in computer graphics.

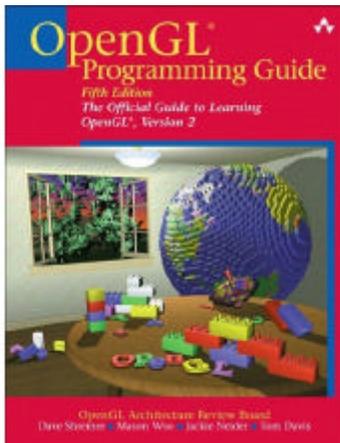
This is not a course in the use of graphics *software* such as Photoshop or Maya. Rather, the course will teach the underpinnings of those programs. Although students will use OpenGL in this course, the focus will be on the underlying mechanisms of OpenGL rather than its sophisticated use.

**Pre-requisites:** This course requires *substantial programming effort*. This course will require you to learn new APIs from books and online resources, and write non-trivial programs from scratch (e.g., no skeleton code). You must have taken CS 216 previously, and gotten a C- or better, or else you will be de-registered from the course.

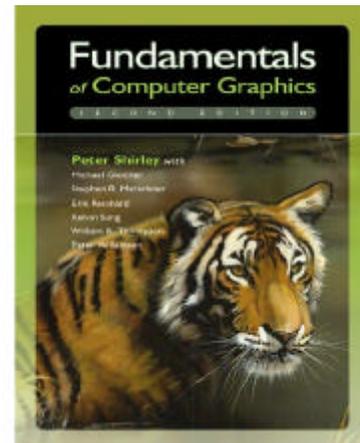
In addition, lectures will make frequent use of basic concepts from linear algebra (vectors and matrices), geometry, trigonometry, and calculus (integral and differential). *You should be comfortable with these concepts.*

**Facilities:** Students can use any of the machines in any ITC lab. All of these machines are running Windows XP with the latest version of Microsoft's development environment. We can provide you with a copy of Visual Studio .NET for your home use at no charge. Although OpenGL code tends to be very portable, your assignments will be graded on the Windows platform. Your code must build on this platform, else it will not be graded.

## Textbooks



Required book: OpenGL Programming Guide: The Official Guide to Learning OpenGL, Version 2.0, Fifth Edition (ISBN 0321335732)



Recommended book: Fundamentals of Computer Graphics, Second Edition by Peter Shirley (ISBN 1568812698)

The lectures will generally follow the subject material in the Shirley book, so you may not want to purchase it if you feel you can absorb the material in lecture. The OpenGL book is for your reference as you learn OpenGL for the homeworks.

**Grading:** Your final grade will be a weighted average of your performance on the assignments, exams, and final project. Assignments are worth 50%, the exams are worth 25%, and the project is 25%. However, *you must do all the assignments to pass the course.*

**Late policy:** Assignments are due electronically at 11:59:59 p.m. on the due date. Assignments turned in up to 24 hours late lose 33%, up to 48 hours late lose another 33%, and after that the assignment is considered a zero.

However, each student has 5 late days to use at their own discretion over the course of the semester. Each late day extends the due date by 24 hours. If you submit an assignment after the due date, you must explicitly state the number of late days you wish to apply to the assignment. With this flexibility built into the late policy, no other excuses will be accepted without a note from the Dean's office. Note that late days are calendar days, not school days. No exceptions for holidays or weekends. Late days do not apply to examinations or to final projects.

Late days are designed to compensate for unforeseen circumstances, such as unusual simultaneous course loads, network outages, disk drive crashes, vacations, scheduled family gatherings, and the like. Of course, you may use them as you see fit. There is no bonus for having extra late days at the end of the semester.

**Special Circumstances:** Students with special circumstances (athletics, extra time required on exams, etc.) need to let us know during the first week of classes.

**Honor Code:** The honor code applies to all work turned in for this course. In particular, all code and documentation should be entirely your own work. You may consult with other students about high-level design strategies related to programming assignments, but you may not copy code or use the structure or organization of another student's program. Said another way, you may talk with one another about your programs, but you cannot ever look at another student's code nor let another student look at your own code for any reason. You must write and debug your own code.

*If you ever find yourself looking at another student's code for any reason, you are in violation of this policy (unless explicitly allowed).*

Any honor violation or cheating will be referred to the honor committee, **and will result in an immediate failure for the course**, regardless of the outcome of the honor trial or your other grades. No exceptions!

**Final projects:** There will be a presentation of the final course projects towards the end of finals week (our final is scheduled for the second to last day anyway).