

CSCI 440 - Introduction to Computer Graphics Fall 2006

Department of Computer Science and Quantitative Methods
College of Business Administration
Winthrop University

Class Time: Tuesdays and Thursdays 2:00-3:15pm
Instructor: R. Stephen Dannelly, PhD
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Office Hours: Tuesdays, Wednesdays, and Thursdays 10:00am to noon
and Wednesdays 1:00-4:00pm
also available by appointment

Course Description

The study of the geometry, mathematics, algorithms, and software design techniques of computer graphics. Students are required to develop numerous computer graphics applications.

Course Objectives

The objective of this course is for students will gain a working knowledge of modern computer graphics. Upon completion of this course, students will:

- understand how software and hardware interact to form images;
- be able to create intermediate level graphics applications using the OpenGL graphics library;
- understand the basic underlying algorithms used in common techniques such as 3D projection, hidden surface removal, lighting, texture mapping, etc;
- recognize the limitations of both graphics hardware and software.

Prerequisites

- CSCI 208
- MATH 201
- preferably CSCI 271 or CSCI 325

Text

Interactive Computer Graphics, 4th Edition
by Edward Angel
Addison Wesley Publishing

Attendance Policy

Programming assignments and exam material will be based on class lectures and discussions. Not all lecture material will come from the textbook. Hence, it will be extremely difficult to successfully complete the course without coming to class.

Course Grades

Programming Assignments: 40%
Midterm Exam: 25%
Final Exam: 35%

Letter grades for the course will be based on a 10-point scale.

Grading Policy

Be sure to keep all graded material, including copies of email messages containing assignment grades.

Programming assignments will be graded not only on correctness of output, but also internal documentation, efficiency, and robustness.

No makeup exams will be given without a doctor's excuse explaining why you were incapable of attending the exam. Makeup exams will be different from the regular exams and hence may be more difficult. Late assignments will be counted 10% off for each 12 hour period after the due time.

All assignments in this course are to be completed by each student working individually. Discussion of the assignments beyond the ideas covered in class is strictly prohibited. For example, if I indicate in class that everyone should use a sorted linked list, then you are permitted to describe to someone how sorted linked lists function. But, showing someone your source code, or helping another student debug their source code, is considered cheating.

COLLEGE OF BUSINESS ADMINISTRATION EXPECTATIONS REGARDING PROFESSIONALISM IN THE CLASSROOM

The College of Business Administration is a professional organization with a well-defined and widely disseminated mission of student development. Accordingly, each class represents a gathering of professionals and professionals-in-training. The instructor's job as a professional is to deliver quality instruction in each class, to start and end each class on time, to be responsive to student perspectives, issues and questions, and to treat each student respectfully. The student's job, as a professional-in-training is to be prepared for class, to be on time, to attend all classes, and to be respectful of others in the classroom.

In accordance with and pursuant to these roles the following guidelines were established to specify to students (both present and prospective) faculty expectations regarding their behaviors

1. **Students will attend all class meetings.** There are no automatically "excused" absences. In the event that you will be unable to attend a class session, you should inform your professor in advance as a matter of professional courtesy just as you would/should with an employer.
2. **Students will arrive in advance of the beginning of the class session.** Late arrivals are disruptive, inconsiderate and unprofessional. Professors may make arrangements for delinquents, but are not obliged to do so. Those not present at the beginning of the classroom period will be considered absent.
3. **Students will not converse among themselves during class except when instructed to do so.** When a student creates a disturbance in the classroom, instructors will either ask the student to desist immediately or speak to the student at the conclusion of class. Repeat offenders will be sanctioned.
4. **Students will not leave class before its conclusion.** Early departures are disruptive, inconsiderate and unprofessional. Professors may make arrangements under some circumstance, but are not obliged to do so. Those not present at the conclusion of the classroom session will be considered absent.
5. **Students will have procured textbook/materials prior to the first class.** Instruction will begin with the first class meeting and consume the remainder of the class period.
6. **Student will arrive on time for exams.** The course instructor will not wait for a student to finish their exam if that student arrived late. The exam ends when the last student to arrive on time completes his/her exam.

STUDENTS WITH DISABILITIES

Winthrop University is dedicated to providing access to education. If you have a disability and need accommodations, please contact the Services for Students with Disabilities office, at 323-3290, as soon as possible. Once you have your Professor Notification Form, please tell me so that I am aware of your accommodations **well before** the first assignment.

Tentative Schedule of Class Meetings
Computer Graphics - Fall 2006

Date	Lecture Topic	Text Reading
Aug 22	Course Overview, projection basics	
Aug 24	graphics pipeline	1
Aug 29	basic drawing functions	2.1 - 2.5
Aug 31	basic viewing	2.6 - 2.7
Sept 5	other basic functions	2.8 - 2.11
Sept 7	double buffering	
Sept 12	input	3
Sept 14	display lists	
Sept 19	matrix math	Appendix C
Sept 21	translation, rotation, scaling	4.6 - 4.8
Sept 26	transformation in OpenGL	4.9 - 4.11
Sept 28	viewing basics	5.1 - 5.3
Oct 3	assignment discussion, review	
Oct 5	Midterm Exam	
Oct 10	orthographic projections	5.4
Oct 12	perspective projections	5.5 - 5.9
Oct 17	projecting shadows	5.10
Oct 19	shading (lights)	6.1 - 6.2
<i>Oct 20</i>	<i>last day to drop</i>	
Oct 24	shading (material properties)	6.3 - 6.4
Oct 26	pixel operations	8.1 - 8.4
Oct 31	creating textures	8.6 - 8.10
Nov 2	mipmaps	
Nov 7	no class	
Nov 9	blending and fog	
Nov 14	buffer operations	
Nov 16	assignment discussion	
Nov 21	curves and surfaces	11
Nov 23	Thanksgiving	
Nov 28	misc techniques	
Nov 30	Wrap Up and Review	

Monday Dec 11 Final Exam 3:00pm - 5:30pm