

# CSC 315 / F07 (IDP)

## Introduction to Computer Graphics

### Dr. Andrew Pounds,

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Office Hours: MW 11:00-11:50 a.m., (or by appointment)

*When asked about the complexity of the physical world, a physicist once said,*

*“There are forces in the world, and coordinates, and precious little else.”*

*Since much of computer graphics involves transforming the physical world into another reality via mathematical abstractions, this statement only has to be slightly modified to describe computer graphics. It should read,*

*“There are transformations in computer graphics, and coordinates, and precious little else.”*

CSC 315 introduces students to the foundational principles of computer graphics. Students in CSC 315 will be exposed to the fundamentals of 2D and 3D graphics hardware and software. Graphics primitives, and the representations of lines, curves, and surfaces in 2D and 3D will be presented as well as the mathematics necessary to carry out the transformations of objects in these spaces. The importance of visual realism and elements of shading and achromatic light will also be introduced. *OpenGL* will serve as the API for the generation of the graphical elements, and the fundamentals of its use will be developed in tandem with the class objectives. Students are expected to have a working knowledge of C or C++. Strategies for code and project management with C/C++ and *OpenGL* will also be developed. Students in CSC 315 are expected to read at the college level and also set up and solve algebraic and trigonometric equations.

### Class Meeting Times and Locations

Lecture: TR 10:50 a.m. –12:05 p.m., Room 200 CSC Bldg.

### Course Materials

*Introduction to Computer Graphics*, Foley, *et al.*,  
Scientific Calculator

### Course Structure

Eight chapters of the text will be covered during the semester in the order listed on the class schedule. Since this is an independent study course, students will ultimately be responsible for covering the material from the text. I will meet with you periodically to expound on and augment the text, discuss problem solving strategies, and demonstrate certain implementations of the *OpenGL* API. Students are responsible for all material disseminated by the professor as well as the material from the textual sections listed in the class schedule. Four programming assignments and two projects will also be submitted for grading. Four 50 minute exams will be given per the schedule. A three hour final exam will be administered at the end of the term.

### Grading

Tests ( 4 @ 100 pts)	400 pts
Programming Assignments (4 @ 50 pts)	200 pts
Projects (2 @ 50 pts)	100 pts
Homework (4 @ 25 pts)	100 pts
Final Exam	200 pts
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Total Possible	1000 pts

The following grading scale is assured but *may* be *slightly* lowered based on test results.

<b>A</b>	≥900 pts
<b>B</b>	≥800 pts
<b>C</b>	≥700 pts
<b>D</b>	≥600 pts
<b>F</b>	<600 pts

## General Information

*Honor Code:* All students in CSC 315 are expected to adhere to the Mercer University Honor Code. Any suspected violations will be reported to the Honor Council for further investigation.

*Attendance:* Attendance is not required.

*Homework:* Students are encouraged to work together on homework assignments. Each person, however, must turn in their own assignments in their own words.

*Homework Grading Policy:* Individual homework assignments will be graded on a three point scale and the composite score from all homework assignments converted to a 250 point scale at the end of the semester. Points will be awarded as follows: 3 (essentially correct), 2 (minor errors or omissions), 1 (major errors or omissions), 0 (no effort). Homework will be considered late if it is not turned in by 5:00 p.m. on the date due. Late homework will be penalized 33% per day.

*Missed Exams:* Anyone missing an exam for *any* reason (personal illness, death in the immediate family, or other emergency) must notify Dr. Pounds in advance. The absence will be considered unexcused otherwise. Make-up exams will be individually scheduled.

*Partial Credit:* Partial credit will not be awarded on any exam unless individuals show their work and clearly delineate how they arrived at their answers.

*Re-grading Policy:* If a student suspects that an error was made in the grading of a submitted work, they may return the paper for re-grading with the understanding that the entire work will be re-graded and not only the portion in question.

*Posting of Grades:* Grades will not be posted. If you are curious about your cumulative grade, see Dr. Pounds.

*American Disability Act:* "Students with a documented disability should inform the instructor at the close of the first class meeting or as soon as possible. If you are not registered with Disability Services, the instructor will refer you to the Student Support Services office for consultation regarding documentation of your disability and eligibility for accommodations under the ADA/504. In order to receive accommodations, eligible students must provide each instructor with a Faculty Accommodation Form from Disability Services. Students must return the completed and signed form to the Disability Services office on the third floor of the Connell Student Center."

"Students with a documented disability who do not wish to use accommodations are strongly encouraged to register with Disability Services and complete a Faculty Accommodation Form each semester. For further information, please contact Disability Services at 478-301-2778 or visit the web site at [http://www.mercer.edu/stu\\_support/swd.htm](http://www.mercer.edu/stu_support/swd.htm)."

*Electronic Submission of Materials:* "Students bear sole responsibility for ensuring that papers or assignments submitted electronically to a professor are received in a timely manner and in the electronic format(s) specified by the professor. Students are therefore obliged to have their e-mail client issue a receipt verifying that the document has been received. Students are also strongly advised to retain a copy of the dated submission on a separate disk. Faculty members are encouraged, but not required, to acknowledge receipt of the assignment."

*E-mail Listserve:* I communicate heavily with the class (and encourage you to do the same) via an e-mail listserv which I maintain myself. Please subscribe to the listserv by going to

<http://theochem.mercer.edu/mailman/listinfo/csc315>

and filling out the required fields. Once subscribed, you may send e-mail to the class by using the e-mail address [csc315@theochem.mercer.edu](mailto:csc315@theochem.mercer.edu) I personally moderate all requests to limit e-mail spam.

## Tentative Class Schedule<sup>1</sup>

Division	Chapter	Topics
ONE	Chapter 1  Chapter 3  Chapters 4 and 8	Introduction Graphics Standards Coordinate Systems Graphics Primitives OpenGL Mouse and Keyboard Interaction Basic 2D Raster Graphics Algorithms Graphics Hardware Interaction Devices <b>EXAM #1, 9/14/07</b>
TWO	Chapter 5	Geometrical Transformations (2D) Geometrical Transformations (3D) <b>EXAM #2, 10/12/07</b>
THREE	Chapter 6 Chapter 9	Viewing in 3D Representations of Curves and Surfaces Representation of Curves and Surfaces (cont.) <b>EXAM #3, 11/09/07</b>
FOUR	Chapter 11 Chapter 12	Achromatic and Colored Light Visual Realism Visual Realism Texturing Issues in High Performance Graphics <b>EXAM #4, 11/30/07</b>
FIVE		Project Presentations <b>FINAL EXAM, (TBA)</b>

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<sup>1</sup>I reserve the right to modify this schedule as situations warrant.