CSC 370 Computer Graphics
Spring 2017: January 9 – May 3
4 Credits

Brittany Morago, Ph.D.
morgaob@uncw.edu
Office: CIS Building 2040
Office Hours: Mon 8:30-9:30, Wed 3:15-4:15, or by appointment

Class Location & Times:
CIS 2003 on Monday, Wednesday 2:00-3:15

Course Description:
Introduction to geometric modeling for graphic programming. Topics include transformations for modeling, viewing, and projection; geometric modeling of curves and surfaces; hidden-surface removal; clipping; graphical buffers; material simulation; texture mapping; and lighting.

We'll cover an introductory overview of major topics in computer graphics. These will include a foundation in digital images and 2D methods followed by a discussion of 3D rendering techniques and the use of modern graphics libraries for hardware rendering. There will be five major activities for learning during the semester:

- Class meetings will cover conceptual material over the range of topics.

- Selected readings will aid in mathematical and technical understanding.

- Programming challenges will provide practical experience.

- Tests will allow practice of concepts in a focused manner.

- The final project gives students a chance to focus on a graphics-related topic of their choosing.

Programming Languages & Libraries:
We will be C/C++ with OpenGL version 4+ to complete programming assignments. While no background in C or C++ is required for this class, you are expected to work to learn these languages during the semester. This is a mathematical and programming-intensive course and a background in at least one programming language is expected.

There is no guarantee that all libraries used in this course will run on personal computers. Students may have to use university computers to complete assignments.

Prerequisites:
CSC 231 and MAT 162

Required Text:
- *Math Primer for Graphics and Game Development*, 2nd ed. by Fletcher Dunn and Ian Parberry
- *Anton's OpenGL 4 Tutorials* by Anton Gerdelan

Recommended Text:
- *Fundamentals of Computer Graphics*, 3rd or 4th ed. by Peter Shirley and Steve Marschner
- *The OpenGL Programming Guide*, 8th ed., Dave Shriener, Graham Sellers, John Kessenich, and Bill Licea-Kane

Grading:
Final letter grades will be assigned as follows:

A: 93+	*A*-: 90-92	
B+: 87-89	*B*: 83-86	*B*-: 80-82
C+: 77-79	*C*: 73-76	*C*-:70-72
D+: 67-69	*D*-: 63-66	*D*-:60-62
F: Less than 60		

Coursework will be used to compute final grades as follow:
Homework assignments: 20%
Programming assignments: 30%
Tests: 25%
Final Project: 25%

Homework assignments will cover the theoretical and mathematical material covered in class and in selected readings.

Programming assignments are an opportunity to practice implementing the concepts covered in class.

Final Projects will be completed in groups of 1-3 students. This is an extended programming project on a graphics-related topic of each group's choosing. Presentations of Final Projects will be held during finals week on Wednesday May 3 from 3:00-6:00 in CI 2003.

Course Policies:
- Although no graphics and only moderate mathematical experience is required for this course, programming competency is assuredly required, and there is no guarantee of technical support on your given platform or machine. Programming projects may take a considerable amount of time. Plan carefully to complete assignments in a timely manner.
- Except for the first day of classes, attendance will not be taken. It is your responsibility to keep up with course material, deadlines, and test dates.
- Late assignments will receive a penalty of 15 points/day.
- Missed tests can be made-up only under extreme conditions (medical, family reasons) that keep you away from school for an extended period. Proof of extenuating circumstances must be provided (doctor's note, prescription, etc.). *Professor must be notified **prior** to exam for a make-up test to be given.* Tests can be taken in advance if you have a scheduling conflict for a job/internship interview.
- Academic integrity is expected on all coursework. Evidence of copying or sharing work on assignments will result in a zero for the assignment and will be reported to the university. The university may or may not decide to take further action.
- This syllabus is subject to change with reasonable notice.

Student Learning Outcomes:
- Students gain understanding of the representation and generation of images using computers.
- Students learn and practice mathematics required for representation of graphic primitives in 2D and 3D with transformations.
- Students learn and implement algorithms for graphical representations and transformations.
- Students gain understanding of and experience using a modern graphics pipeline.
- Students gain experience programming 2D and 3D graphical solutions using APIs such as OpenGL. Students learn mathematics and algorithms for lighting and shading of graphical objects.
- Students complete software projects related to graphics by synthesizing and combining ideas from material covered.

Academic Integrity

University Policy on academic integrity will be followed for this course. Cheating will be taken very seriously, resulting in harsh penalties. Since the skills required in this class are also required in the next class, cheating in this class will seriously hamper your ability to pass the next class.

The University of North Carolina Wilmington is a community of high academic standards where academic integrity is valued. UNCW students are committed to honesty and truthfulness in academic inquiry and in the mastery of existing knowledge. This commitment begins when new students matriculate at UNCW, continues as they create work of the highest quality while part of the university community, and endures as a core value throughout their lives.

It is the responsibility of every faculty member, student, administrator and staff member of the university community to uphold and maintain the highest academic standards and integrity of the university. Any member of the university community who has reasonable grounds to believe that an infraction of the Honor Code has occurred has an obligation to report the alleged violation to the faculty member teaching the class who, in turn, must report the allegation to the Office of the Dean of Students. This obligation is a core value of the Honor Code, and must be fulfilled by each and every member of the university.

Special Needs

If you have a disability and need reasonable accommodation in this course, you should inform the instructor of this fact in writing within the first week of class or as soon as possible. If you have not already done so, you must register the Office of Disability Services in DePaolo Hall (ext. 2-3746) and obtain a copy of your Accommodation Letter. You should then arrange a meeting to make mutually agreeable arrangements based on the recommendations of the Accommodation Letter.

Title IX

UNCW takes all forms of interpersonal violence very seriously. When students disclose, first- or third-hand, to faculty or staff about sexual misconduct, domestic violence, dating violence and/or stalking, this information must be reported to the administration in order to ensure that students' rights are protected, appropriate resources are offered, and the need for further investigation is explored to maintain campus safety.

There are three confidential resources who do not need to report interpersonal violence: UNCW CARE, the Student Health Center, and the Counseling Center. If you want to speak to someone in confidence, these resources are available, including CARE's 24-hour crisis line (910-512-4821).

For more information, please visit www.uncw.edu/sexual misconduct or www.uncw.edu/care.