CMSC 381: Introduction to Graphics Programming

15th of January, 2019

Lecture:	TR 11:00-12:15pm, Ruffner 354
Website:	`http://cs.longwood.edu/courses/cmsc381/s19/`

Professor:	Julian Dymacek
Office:	Ruffner 342
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Office hours:	MWF: 11am–12pm
	T: 12:30–1:30pm
	W: 2–3pm
	by appointment or the door is open

Course Description

This course is designed to introduce students to computer graphics programing techniques. It will combine the use of a high level programming language with a publicly available graphics application programming interface. Other topics will include the mathematics to manipulate geometric objects. 3 credits.

Prerequisites

CMSC 162 and MATH 261.

Course Objectives

The student will:

1. To draw basic primitives, such as points, lines, and polygons
2. To develop complete graphical applications that take user input and manipulate three dimensional scenes
3. The mathematical underpinnings of computer graphics, including vector arithmetic, affine transformations, and homogenous coordinate systems

Textbook and Resources

No required book. Some readings maybe provided and links will be provided on the course website.

Course Requirements

Tentative Course Schedule

Week	Date	
1	Jan. 15-17	Introduction, Pixels, Images
2	Jan. 22-24	Matrix operations, Transforms
	Jan. 21	*Martin Luther King Jr.* no class
3	Jan. 29-31	Line and Curve Drawing, Anti-Aliasing, Subpixel
4	Feb. 5-7	Polygons, Triangles, Animation, Textures
5	Feb. 12-14	Texture fills, Vector Images
6	Feb. 19-21	Shaders, 2D graphics
7	Feb. 25-28	Interpolation, Animation
8	Mar. 4-8	*Spring Break* no class
9	Mar. 12-14	Particles, Physics
10	Mar. 19-21	3D graphics, Projection, Camera
11	Mar. 26-28	Ray casting, Ray tracing
12	Apr. 2-4	Shading
13	Apr. 9-11	Animation, Quaternions
14	Apr. 16-18	Additional topics
	Apr. 23	*Undergraduate Research Day* no class
15	Apr. 25-30	Additional topics
	May 7	**Final Project:** Tuesday 3-5:30pm

Important university dates

Jan. 23	Last day of Add/Drop (5pm)
Feb. 22	Last day for Pass/Fail (5pm)
Apr. 02	Deadline to withdraw with "W"
Apr. 30	Last day of classes

Grading Scale

		A	100–91	A–	90
B+	89	B	88–81	B–	80
C+	79	C	78–71	C–	70
D+	69	D	68–61	D–	60

59 and lower is an F

Graded work

This course is programming intensive, you should budget your time to include reading, assignments, class, and homework. If you are stuck on something talk to me sooner rather than later. The entire course is cumulative so you cannot afford to get behind.

Homework & Quizzes: You are expected to be an active participant in the class. You should be present and engaged. Pop quizzes will be given in class and cannot be made up. Homework will cover problems related to the in class material.

Projects: There will be at least five projects assigned in the class. Projects will be larger assignments and require outside research. Some projects will be completed in groups. Project grades will be based on both individual and group performance.

Final Project: There will be both a final project due during the regular exam period.

Breakdown

Projects:	55%
Final Project:	25%
Homework & Quizzes:	20%

Policies

For a list of campus wide polices please see:
`http://www.longwood.edu/academicaffairs/syllabus-statements/`

Honor Code

We will follow the Longwood Honor Code in this class. When completing work please do not lie, cheat, or steal.

1. Do not lie and claim someone else's ideas as your own: you must give proper attribution
2. Do not cheat and copy work from another student or the Internet
3. Do not steal someone else's work and submit it: your files are to be written by you
4. YOU are responsible for securing YOUR code/work: do not let someone else have access to your work/files

If you are unsure if your action will violate the honor policy: DON'T DO IT. Feel free to talk with me if you have questions.

Infractions of these policies will be dealt with harshly under the Longwood Honor Code with cases turned in to the Honor Board. Any student convicted of an honor offense involving this class will automatically receive a lowered *final course grade*, potentially severe as an **F**. You should consider all work in this class to be pledged work, whether or not the pledge appears on the assignment.

Support

Programming (and mathematical proof) is a different way of thinking about problem solving. A solution is not necessarily easy or obvious. I strongly encourage you to follow along with the class in readings and activities. When you have questions, ask. In addition to my regular office hours, you can always email to schedule a time to meet. If my office door is open feel free to stop by, if my door is closed I'm not available.

Attendance and late work

You are expected to attend and participate in class. Attendance will be recorded in every class. In accordance with campus policy, missing more than 10% of scheduled class time to unexcused absences may, at my discretion, result in the loss of one letter grade. Missing 25% of class or more, whether excused or not, may result in an automatic failing grade.

Late work will not be accepted outside of exceptional circumstances such as serious medical or family emergencies. Most extensions will require a note from a Longwood administrator.

Laptops and other electronic devices are not to be used during class, except with permission. No food in class.

Inclement weather policy

I don't plan to cancel class for weather unless the entire college shuts down. If extenuating circumstances cause me to cancel class, you will be notified by e-mail.