

**CS 392 Special Topics: GPU Programming**  
**Fall 2022**  
**MW 12:00-1:15, Lab Monday 3:00-5:45**

### **Instructor Information**

Name: S. Seth Long, Ph.D  
Office: TJH 204  
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Office Hours: Monday 2:00-3:00, Thursday 9:30-10:30

### **Class Website**

The class website is located at <http://isoptera.lcsc.edu/~seth/cs492>. Look here for assignment information, lecture notes, etc.

### **Course Goals**

At the end of the course, students should

- Understand purpose and use of the Graphics Processing Unit
- Be able to use OpenGL 2.0+ and GLSL
- Be familiar with general-purpose GPU programming using CUDA or OpenCL
- Be prepared to apply graphics processors to other tasks in computing

### **Textbook**

There is no single textbook for this course. A variety of online resources will be used instead.

### **Grading**

Your grade will be calculated based on the following items:

Item	Percentage of grade
Midterm	15%
Final	20%
2 Projects	40% total
2 Project Presentations	10% total
Lab	15% total

Lab assignments will be due at the beginning of the next lab session, thus providing a week to finish them.  
Grades will be assigned according to a standard curve, that is:

- A: 90% +
- B: 80%- 90%
- C: 70%- 80%
- D: 60%- 70%
- F: less than 60%

Use of + or - grades (such as B+ or A-) and curves will be at the instructor's discretion.

### **Deadlines and late work**

Late work will not be accepted, except by instructor discretion. However, partial credit will be given for partially-completed work. It is better to turn in an unfinished assignment for partial credit than to not turn in something on time and receive a 0.

### **Attendance**

Attendance will not be taken in this class except as required for financial aid purposes. However, all material presented during lecture and student presentations is "fair game" for the midterm and final, and some of this material may not be in any online resources. Therefore I recommend that you always attend class.

## Academic Dishonesty

Cheating on any assignment will result in failing the class. Some things which constitute cheating in this class are:

- Copying another student's homework
- Turning in homework created by another student
- Reading another student's answers on a test
- Sharing all or part of your completed homework with another student before the assignment is due

Appropriate collaboration on homework involves sharing ideas with other students only, not source code! Although it is often tempting to help another student by showing them how your completed program works, this is not helpful to their learning. However, this does not mean you cannot collaborate with other students on homework. Sharing of ideas, principles, and algorithms is permitted and encouraged.

## Course Calendar

<b>Very Tentative Fall 2022 CS392 GPU Programming</b>	
Aug 22	Course Introduction and 3D spaces, OpenGL Applications
Aug 29	Vertex and Fragment Shaders
Sep 5	Geometry Shaders
Sep 12	Tesselation Shaders
Sep 19	Compute Shaders
Sep 26	An interesting demo using various shader types
Oct 3	Lighting
Oct 10	More Lighting, Midterm Review
Oct 17	Midterm and answers
Oct 24	Project 1 Presentations, intro to Vulkan
Oct 31	Intro to Vulkan, continued
Nov 7	Last week of Vulkan intro
Nov 14	Ray Tracing with the RTX
Nov 21	Thanksgiving Break
Nov 28	General-Purpose GPU Computation
Dec 5	Topics of Interest, catch up, project 2 presentations
Dec 12	Final Exam is Wednesday, December 12, at 12:00 PM