Welcome to CSc-155 - Advanced Computer Graphics   READ CAREFULLY

I'm Scott Gordon, the instructor for CSc-155 -- Advanced Computer Graphics. You are receiving this document because you are either enrolled or on the waitlist. You have probably heard that there is a planned faculty strike during the first week of classes, so I created this document (and the accompanying video) to let you know what is going on, my plans for the first week, to tell you about the course, and to let you know what you should do.

➢ **About the strike**

The strike is statewide, January 22-26, affecting all CSU campuses statewide. Assuming that the strike happens, I will strike too. A main reason for the strike is faculty pay. It affects all departments, including ours. My concern is not my own pay, but the great difficulty we have hiring and retaining CSC faculty because CSU salaries are not competitive with comparable schools. The effect is obvious: the number of professors in the CSC department at Sac State is HALF what it was 20 years ago, even though the number of students has at least tripled.

The word "strike" is very clearly-defined: it means we do no work, at all. That means <u>I will not hold courses during those five days</u>, and <u>I am not expecting you to attend</u>. I also won't do any advising, won't answer work-related emails, won't add or drop students, won't physically cross the picket line, etc. This is actually important, because legally we are not considered to be striking if we do any work at all - and any legal protections for striking disappear if I do any work. I will answer emails until this Sunday night, and then resuming Saturday the 27th.

I am VERY sorry to miss the first week of classes –anything that disrupts your learning is upsetting to me.

➢ **Are you trying to add CSc-155 ?**

If you wish to add CSc-155, send me an email, even if you are already on the waitlist. When classes resume on January 29th, try to attend. Do the assigned activities so that you aren't behind if I am able to add you. I cannot guarantee anyone a seat, but I will continue to maintain the waiting list, and I will work with the department chair regarding who should get priority in adding the class as spots open. But I have to know that you still want to add.

➢ **What are the prerequisites ?**

You may have heard that the prerequisites to CSc-155 no longer require CSc-133. This is true. We are in the process of expanding our graphics offerings, and restructuring them so that CSc-155 can be taken earlier. The prerequisites for CSc-155 now are CSc-130 and CSc-131.

➢ **What will happen when we return in week #2 ?**

Because there is a waiting list of people wanting to add CSc-155, I will take roll every day during weeks 2 and 3, until enrollment stabilizes. If you plan to skip class, please email and let me know if you want to stay in the class.

About the Course -- CSc-155

➢ **Shader Programming**

Computer graphics today is accomplished by what is called "shader programming". This is code that runs partly on the CPU, and partly on the GPU. This is a class on shader programming. We will be using OpenGL, and its shader language, which is called GLSL. We will make heavy use of the RVR-5029 graphics computer lab.

You should all Google the following – "is shader programming hard to learn?", then look at all the Reddit threads of people struggling. In my 40+ years as a computer scientist, it is the most challenging topic I have tackled. However, it is also the most interesting and exciting, and now I am completely hooked on it!

In short, this is a difficult class – if you signed up thinking it would be easy, DROP! If you are looking for a hard-core programming course that will stretch your mind, this is it. But you will need to apply yourself!

➢ **Where are the CSc-155 course materials ?**

CSc-155 course materials are on Canvas, and should be accessible now. For those students not yet enrolled and trying to add, I have placed the first set of materials here: **https://athena.ecs.csus.edu/~gordonvs/155/155ref.html**

➢ **The Textbook**

Yes, I wrote the textbook. It is used all over the world, and I believe it to be the easiest way to learn modern shader-based OpenGL. I wrote the book because I myself had a difficult time learning shader programming, and I thought there needed to be a book that explains things clearly. The book uses Java and GLSL. I also made videos for each chapter, which I post on Canvas. As you read a chapter, you should also watch the video.

You absolutely need the book, AND you will need the book's ancillary files. These are on an accompanying CD, or, if you have an electronic copy, from the publisher via email. If you got the book and there is no CD, copy the ancillary files from another student's book. At the request of my publisher, I don't distribute the ancillary files.

You must get the latest edition of the book (3rd edition). Earlier editions will not be adequate.

➢ **What language(s) will we use?**

I will be teaching the material in JAVA and GLSL, and that is the language I strongly recommend you use.

There is an option of using C++ and GLSL. There is a C++ edition of my textbook, that is mostly in lockstep with the Java edition. However, I will be teaching in Java, and if you choose C++ you will be more on your own. If you really want to use C++, contact me and we can discuss in detail whether that is a good idea in your case.

➢ **Should I use a PC ? Mac ? Linux ?**

The RVR-5029 lab is PCs with Windows 10 and Java 17. That is what we will use. Windows 11 will probably work as well, although I haven't fully tested it. Newer versions of Java might work, but I haven't tested them.

The Mac has terrible support for OpenGL, and stopped updating OpenGL on Macs years ago. If you want to try using a Mac, the textbook Appendix B describes what you need to do. OpenGL support for Linux is better, but if you use Linux you will be on your own; I don't have materials for Linux. In either case, when it comes time to turn in your work, you'll need to test it on a PC in the lab because that is what the grader will use.

If you don't have a PC, you can check out a laptop from campus IRT. Several students have done this successfully. You can also get a key-fob for the RVR-5029 lab and use those machines when class isn't in session.

➢ **Do I need to install OpenGL ?**

No, but there are some libraries that need to be installed (Java 17, JOGL, and JOML). Installation instructions are posted on our Canvas page. The libraries are already installed in the 5029 lab.

If you are also enrolled in CSc-165 (Game Architecture), you can install the libraries for that class, and you will already be configured for CSc-155. The 165 libraries are a superset of the 155 libraries.

➢ **Will we be making pretty pictures ?**

Yes! Examples of past years' student work: **https://athena.ecs.csus.edu/~gordonvs/155images/images.html**
Some of these examples are animated, so click on the links to view the animated scenes.

What to do During the Strike

I don't want you to waste the first week, so I have plenty for you to do! Don't be idle – do the following:

1. Read the syllabus thoroughly – it is full of critical information that I will assume you know and follow.
2. Watch the three CSc-133 matrix transform videos that I posted on Canvas and on my website.
3. Read Chapter 1 of the textbook, and start reading Chapter 2. Chapter 2 is HARD, study it carefully.
4. If you need to check out a PC from campus IRT, get that process started now. If they need my approval, I will need to send that email before the strike starts.
5. Install the libraries using the posted installation guide, then test using the "Tumbling Cube" posted code.

As you do each of the above items, write down any technical questions that you have. I plan to spend most of the time on Monday the 29th answering questions, so be proactive and come prepared with your questions!

I look forward to meeting you all in person on Monday January 29th!