Course Syllabus: *Computer Graphics*
Spring, 2021, SWE3008

Instructor: Prof. Sungkil Lee (이성길),
Computer Graphics Lab., Sungkyunkwan University

Course Webpage:

http://cg.skku.edu/course/cg/

Time and Place:

Lecture: Tue. 12:00–13:15, Thu. 13:30–14:45 (BD1213), fully online (iCampus)

Online Office Hour:

13:15–14:15, every Tuesday
Methods: real-time feedback for emails

Teaching Assistants (TAs):

Cho, Hoonmin (조훈민)

Communications:

email: cg_g@g.skku.edu (shared with Professor and TA); I will not answer emails to my private account.

Course Summary

Computer graphics is a fundamental tool for creating and manipulating visual media including games, animation, virtual reality, and web, and is also a crucial component for science and engineering software. This course covers basic theory and practical techniques of computer graphics for digital media. This course particularly deals with modern-style GPU shader programming for its implementation.

Textbook and References

- *Interactive Computer Graphics: A Top-Down Approach with Shader-Based OpenGL*. **6th** Edition, Edward Angel and Dave Shreiner, 2011.
- *OpenGL Programming Guide: The Official Guide to Learning OpenGL, Versions 4.3* (aka Red Book). Dave Shreiner, 2013.
- http://www.opengl.org: Documentation and sample codes

Prerequisites:

Data structures, Algorithms, Linear Algebra, C++

Grading Policy

Attendance/attitude	Assignments	Team Projects (Final Exam)
10%	60%	30%

Attendance Policy

- https://icampus.skku.edu will be used to check if you attend online.
- *When you are absent 6 times or less, the absence has no effect on your grade.* Otherwise (*absent more than 6 times*), you get graded **F**.
- When you miss the final exam, you will fail to pass this course.
- Absence will be considered presence, given a valid proof only for the following exceptions:

1) your family passed away;

Course Agenda

ID	First			Second			Assn.	Due
	date	mode	subject	date	mode	subject		
1	02-23		Course overview	02-25		Images and displays		
2	03-02		Graphics systems	03-04		OpenGL: Introduction	A0	
3	03-09		OpenGL: Introduction	03-11		OpenGL: Hello triangles		A0
4	03-16		OpenGL: GLSL	03-18		OpenGL: Circle modeling	A1	
5	03-23		Geometry and Math	03-25	**streaming**	Free QnA on A1		
6	03-30		Transformations	04-01		OpenGL: Transformations	A2	A1
7	04-06		Viewing	04-08	**streaming**	Introduction to T0 and T1	T0, T1	
8	04-13		Projection	04-15		OpenGL: Camera	A3	A2
9	04-20		Shading	04-22		OpenGL: Shading		T0
10	04-27		Textures	04-29		OpenGL: Textures	A4	A3
11	05-04		Advanced Texturing	05-06		OpenGL: Framebuffers		
12	05-11		Rasterization	05-13		OpenGL: Image Processing		A4
13	05-18		Ray Tracing	05-20		—		
14	05-25		Global Illumination	05-27		—		T1
15	06-01	**streaming**	T1: oral presentation	06-03	**streaming**	T1: oral presentation		

* Unless noted, lectures are assumed to be pre-recorded online video lectures.
* Real-time streaming lectures will use either of WebEx, Zoom, or Microsoft Teams (when available).
* Make-up classes, compensating for national holidays and business travels, will be covered with (pre-recorded) online video lectures.

Assignments

ID	Name	Percentages	Subjects
A0	The Book of Shaders		Read https://thebookofshaders.com/
A1	Moving circles	15%	A simple 2D animation of circles
A2	Planet in space	15%	Geometric modeling of a 3D sphere
A3	Solar system I: moving planets	15%	3D transformations with camera interaction
A4	Solar system II: full system	15%	Shading, textures, and more

Team Project (Final Exam)

ID	Name	Percentages	Subjects
T0	Team organization		Form a team for T1
T1	Your own 2D/3D OpenGL game	30%	animation, interaction, and fun