Instructor: Han-Wei Shen (hwshen@cse.ohio-state.edu)
Class: MWF 10:20 AM - 11:15 AM DL 317
Office hours: MW 11:15 AM - 12:20AM DL 789

Grader and grader: Joseph Barker (barker.348@osu.edu)
Grader officer hours: Tuesday 11 am – 12:30 pm; Friday 12:30pm – 2pm ; DL 486

Grading:
• 5 Labs: 60%
• Midterm Exam: 20%
• Final Exam: 20%

Prerequisite: CSE 3901(or 3902, or 3903), math 2568 or permission of instructor

Course Contents: OpenGL/WebGL basic drawing, OpenGL shading language, transformations, viewing and projection, illumination, texture mapping; advanced shading and lighting; shadow algorithms; visibility and occlusion culling; advanced rendering topics.

Textbook:
• Interactive Computer Graphics, a top-down approach with WebGL, 7th edition, Edward Angel and Dave Shreiner

Reference books:
• OpenGL Programming Guide (OpenGL 4.3), 8th edition, Addison Wesley
• OpenGL 4.0 Shading Language Cookbook
• OpenGL Shading Language, By Randi J. Rost, Addison Wesley

Topics:
• Overview of graphics hardware
• Overview of OpenGL, WebGL, and GLSL
• OpenGL simple drawing and coordinate systems
• OpenGL vertex buffer objects
• OpenGL shading language: vertex and fragment shaders
• 2D and 3D object transformations;
• 3D viewing and projection
• Visibility and Z-buffer
• Illumination and shading: flat, gouraud, phong shading
• Texture mapping: image and procedural textures
• Advanced texture mapping: bump mapping, environment mapping, projective texture mapping
• Real time shadow algorithms
• Advanced topics in shaders: