CS 485: Computer Graphics (Spring 2015)

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See the course D2L site for this document in electronic form as well as ongoing information on Labs and Assignments

Course Description:
This course provides an introduction to the principles of modern computer graphics. Both the hardware and software aspects of graphics systems will be examined. Fundamental graphics concepts and algorithms will be discussed as well as graphics programming using a modern graphics standard. Topics will include graphics primitives, clipping, interaction, object modeling, viewing, shading, rendering, aliasing and animation.

Some of these aspects will be explored using Blender, a powerful open source 3D content creation package (modeling/rendering/animation/game engine). Our programming assignments will use WebGL allowing us to create applications which are cross-platform and run hardware accelerated graphics from within modern HTML 5 browsers. OpenGL is the industry’s most widely adopted 2D/3D graphics API. WebGL is based upon OpenGL ES 2.0 (ES for embedded systems and mobile devices). This is a modern version of OpenGL (programmable rather than fixed pipeline) so we will also be introducing programmable shaders and GLSL (the OpenGL shader language). Most programming assignments are expected to be in Javascript a language that programmers with Java/C family language experience should adapt to with little trouble. The combination of Blender and OpenGL can be used to create graphic content and software for games, interactive visualizations and more.

Prerequisites: 306 with grade of C or better. Math 150 and 221 are recommended.

Recommended Texts:
Edward Angel & Dave Shreiner, Pearson 2015


Outline:(tentative)
• Introduction & Overview of Computer Graphics
• Graphics Programming with Javascript, OpenGL, GLSL etc.
• Input and Interactive Graphics
• Transformations and Geometry
• Viewing
• Modeling
• Underlying Algorithms (Rasterization, Clipping etc.)
• Lighting, Shading, Rendering
• Texture
• Animation
General Policies

Make-ups and incompletes will be given only in extreme circumstances. You may feel free to discuss general concepts related to programming problems but the actual solutions to the specific problems should be worked out individually or within your group if given a group assignment.

Grading:(tentative)

- Exams (45-55%) Our last exam will be given during the assigned time slot (Wed May 13, 10:15a-12:15p) for this course during finals week. The final exam schedule is available online at: http://registrar.siuc.edu/calendars/finalexam.html
- Homeworks, Labs, Presentations (45-55%)

Failure to turn in homework or programming assignments can drastically lower your grade. Please do these assignments conscientiously. Resolve any issues pertaining to the grading of an exam/assignment within 1 week after it is returned. All students should read the Departmental Policies on Academic Dishonesty.

The University has collected other useful information for this semester in this attachment. Also review the Emergency Response Guide. More information is available at SIUC’s Department of Public Safety.