Unit 4 Reading (due Thursday, February 7)

Please let the instructor know immediately if you have trouble accessing any of these materials. There is nothing to turn in for your reading, but you will be expected to be comfortable with these concepts for your quizzes.

Required Reading:

Lighting and Shading:

Introduction to Computer Graphics by by Marco Di Benedetto, et. al., Chapter 6 (https://www.safaribooksonline.com/library/view/introduction-to-computer/9781439852798/K12432_C006.xhtml) - You only need to read through to the end of section 11.1. It's a gentle introduction to ray optics.

Computer Graphics Through OpenGL, Chapter 11 (https://www.safaribooksonline.com/library/view/computer-graphics-through/9781482258394/K24133_C011.xhtml) - You only need to read Section 11.2. This takes the concepts from the previous reading and goes into a bit more mathematical detail. However, section 11.1 is a good, optional read if you want a review of color models (HSV, CMYK, etc.) from the first week of class.

Introduction to Computer Graphics by David Eck, Section 4.1 (http://math.hws.edu/graphicsbook/c4/s1.html) - Just read this page. It has some nice simulations with which you can play around and see these concepts in action.

WebGLFundamentals: These take the concepts from the readings above and show how they're implemented in WebGL.

- **Directional Lighting** **(https://webglfundamentals.org/webgl/lessons/webgl-3d-lighting-directional.html)**
- **Point Lighting** **(https://webglfundamentals.org/webgl/lessons/webgl-3d-lighting-point.html)**
- **Spot Lighting** **(https://webglfundamentals.org/webgl/lessons/webgl-3d-lighting-spot.html)**

Introduction to Computer Graphics by by Marco Di Benedetto, et. al., Chapter 8 (https://www.safaribooksonline.com/library/view/introduction-to-computer/9781439852798/K12432_C008.xhtml) - Read through the end of section 8.2. This explains how shadows work.

Texture Mapping:

Introduction to Computer Graphics by David Eck, Section 4.3 (http://math.hws.edu/graphicsbook/c4/s3.html) - Don't worry too much about understanding the OpenGL examples. The readings below discuss how these concepts are implemented in WebGL.

Introduction to Computer Graphics by David Eck, Section 7.2 (http://math.hws.edu/graphicsbook/c7/s2.html) - Builds on the concepts from section 4.3 and looks at WebGL examples.

WebGL Fundamentals:

- **3D Textures** **(https://webglfundamentals.org/webgl/lessons/webgl-3d-textures.html)**
- **Data Textures** **(https://webglfundamentals.org/webgl/lessons/webgl-data-textures.html)**
- **Using Two or More Textures** **(https://webglfundamentals.org/webgl/lessons/webgl-2-textures.html)**

Optional Reading:

Scratchapixel: What is Shading **(https://www.scratchapixel.com/lessons/3d-basic-rendering/introduction-to-shading/what-is-shading-light-matter-interaction)** - This goes into a little more conceptual detail about the physics and terminology of light/matter interaction.

Scratchapixel: Phong Model **(https://www.scratchapixel.com/lessons/3d-basic-rendering/phong-shader-BRDF)** - This goes into more detail about the Phong lighting model. It also mentions BRDF, which we won't be discussing in this class.

Introduction to Computer Graphics by David Eck, Section 7.2 (http://math.hws.edu/graphicsbook/c7/s2.html) - These are supplementary examples (including some interactive ones) of lighting implementation in WebGL.

WebGLFundamentals: Cross Origin Images **(https://webglfundamentals.org/webgl/lessons/webgl-cors-permission.html)** - This addresses a common issue with the final project, where you'll be doing texture mapping.