

## **DPA 8090: Test One Review**

Points, vectors

Dot product

Cross product

Uses of the dot product

Basics of ADS with Blinn-Phong

Basics of realtime graphics pipeline (primarily OpenGL)

Application code, vertex shader, fragment shader

VAO, VBO, position, normals, texture coordinates

Uniforms, variables

What does the VS do?

Basics of model, view projection matrix transformations

Data flow for vertices (interpolation of attributes)

What does the FS do?

Shading the fragment

S, T (U, V) coordinates

Shaping functions: line, step, smooth-step, others such as parabola, etc.

Sin, cos, tan

Pseudorandom numbers

Value noise

Perlin (gradient) noise

fBm (noise at different scales)

Turbulence

Voronoi cellular pattern

Texture layout basics: projection, cut, unfold, etc.

Qualities desired in texture layout (proportion and scale; avoidance of seams; avoidance of overlap)

Deferred rendering (G-buffers, MRT, two-passes, optimizations such as for localized lighting with many lights and post-processing effects)