

# Cs445/Cs545

## Materials for the midterm

The slides, which you can find on the course webpage, contain most of the material.

1. Transformations (translations, rotations etc) in 2D and 3D, homogenous coordinates. Approximations to rotations. Arbitrary rotation - changing coordinate systems.
2. Coloring Polygons. Flood fill and scan conversions. Heuristics for expedite the algorithm.
3. Illumination Models and Shading. Explanations to the Diffuse Light Equation. The effect of Specular reflection, and Phong Model. Gouraud Shading and linear interpolation. The difference between Gouraud Shading and Phong Shading.
4. Hidden Surfaces Removal. Depth Sort and Painter Algorithm. Criteria for identifying cases where a depth order exists. Binary Space Partition and the Painter Algorithm. Z-buffer algorithm, and its relationship to linear interpolation. A-buffer and transparency. Scan-line Z-buffer.
5. QuadTree, and its usage for Ray Tracing