## Course Takeaways

- the core elements of 3D graphics
  - geometry – polygonal mesh, geometric transforms, hierarchical modeling
    - polygonal mesh isn't the only representation e.g. implicit surfaces (equations)
  - appearance – texture, material, lighting
    - OpenGL notion of material – ambient, diffuse, specular colors; shininess
    - OpenGL lighting model
  - producing the image – viewing and projection, rasterization (assigning colors to pixels)
- OpenGL/WebGL: polygon pipeline, both fixed and programmable
  - ideas
  - writing WebGL programs



## Course Takeaways

- improved lighting models within the polygon pipeline
  - shadows – shadow mapping
  - approximating reflection and refraction – environment mapping



## Course Takeaways

- sequences of images – animation
  - techniques for specifying motion paths
- modeling and animating fuzzy and complex objects
  - particle systems
- alternatives to the polygon pipeline and the OpenGL lighting model
  - raytracing
  - more generalized materials: BSDFs
  - more generalized lighting models: rendering equation
  - solving the rendering equation: path tracing, photon mapping, radiosity