

CMP 160
Introduction to Computer Graphics
Course Contents
Spring 2004

Prerequisites: Linear Algebra (matrix multiplication, determinants, dot products and cross products), and CMP 101 (data structures and C, Java or C++ programming) or equivalent.

Course Contents: Topics to be covered in the class include

- Overview: Hardware, Software and Applications
- Bresenham Line Drawing Algorithm, Polygon Filling ScanLine Algorithm, Cohen-Sutherland Line Clipping Algorithm, Hodgman-Sutherland Polygon Clipping Algorithm
- Windows and Viewports, 2D Transformations, 3D Geometric Transformations, 3D Viewing Transformations, Viewing, Projections
- 3D Graphics Pipeline
- Modeling Curves, Surfaces and Solids, Hierarchies
- Hidden Surface Algorithms
- Color, Lighting Models, Shading
- Texture, Transparency
- Keyframe Animation
- *Some* of the following topics: scientific visualization, particle modeling, behavioral animation, geospatial visualization.
- Extensive programming experience with OpenGL and FLTK using C or C++