COMP 4490 - Computer Graphics 2

Calendar Description: Methods in computer graphics including topics such as representation of curves and surfaces, viewing in three dimensions, and colour models. 
Prerequisite: COMP 3490.

Outline

1) Matrix representation of 3D transformations (1 week)
   Homogeneous coordinates in 3D. Translation, scaling, and rotation matrices and their inverses. Composition of 3D matrix transformations.

2) 3D viewing and the synthetic camera (1 week)
   Parallel and perspective projections. Setting up a synthetic camera; world coordinates and camera coordinates.

3) Polyhedral display (1 week)

4) Representation of curves (7 weeks)

5) Representation of surfaces (1 week)
   Bilinear, biquadratic, and bicubic patches. Generating face and vertex lists for the polyhedral representation of a smooth surface.

6) Achromatic and coloured light (1 week)
   Hue, saturation, and brightness/lightness. Tristimulus theory. Colour pickers.

7) Extra topics (1 week)
   If time permits, extra topics. Example: PostScript.