

CMSC 427 – Tentative Course Plan

Fall 2005, Amitabh Varshney

Sep 1	Motivation, Overview <i>applications, graphics pipeline</i>	Sep 6	Graphics APIs and Pixel Operations <i>event-driven computing, OpenGL, GLUT</i>
Sep 8	Geometric Primitives and Transforms <i>linear algebra, 2D Transforms</i> <i>homogeneous coords, composition</i>	Sep 13	2D and 3D Transformations <i>hierarchical transforms, rotations</i>
Sep 15	Line Drawing <i>overview, algorithms</i> Assignment 1 given	Sep 20	3D Viewing <i>parallel, perspective</i>
Sep 22	3D Viewing and Screen Picking <i>canonical views, selection</i>	Sep 27	Polygon Drawing <i>overview, algorithms</i>
Sep 29	Color and Transparency <i>models, dithering, blending</i> Assg 1 due, Assg 2 given	Oct 4	Culling and Collisions <i>VFC, back-face, visibility</i> <i>depth cues, collision detection</i>
Oct 6	Visibility Determination <i>object-order, image-order</i> <i>Z-buffer, cells/portals, BSP trees</i>	Oct 11	Illumination and Shading <i>ambient, diffuse, specular</i> <i>flat, Gouraud, Phong</i>
Oct 13	Textures <i>use, types, mapping</i> Assg 2 due, Assg 3 given	Oct 18	Sampling and Filtering <i>anti-aliasing</i>
Oct 20	Course Recap	Oct 25	Ray Tracing <i>overview, acceleration</i>
Oct 27	Mid-Term Exam <i>based on Sept 1 – Oct 20</i>	Nov 1	Shadows <i>shadow matrices, shadow z-buffer</i>
Nov 3	Radiosity <i>overview</i> Assg 3 due, Assg 4 given	Nov 8	Modeling Overview <i>various primitives, mesh LOD</i>
Nov 10	Curves and Surfaces <i>Bézier and B-splines</i>	Nov 15	Graphics Display Technology <i>vector/raster, CRT, LCD, DMD</i> <i>human visual system</i>
Nov 17	Graphics Processing Units <i>architecture, applications</i> Assignment 4 due	Nov 22	Point-based Rendering <i>overview, approaches</i>
Nov 29	Image-based Rendering <i>overview, approaches</i>	Dec 1	Volume Rendering <i>overview, applications</i>
Dec 6	Computer Animation <i>overview</i>	Dec 8	Virtual Environments <i>technology, applications</i>
Dec 13	Wrap-up Review	Dec 19	Final Exam 10:30am – 12:30pm