

CMSC 740 – Tentative Course Plan

Fall 2008, Amitabh Varshney

Sep 2	Overview, Human Visual System <i>applications, pipeline, perception</i>	Sep 4	Graphics Hardware and APIs <i>GPUs, OpenGL, GLUT</i>
Sep 9	Transformations and Viewing <i>types, composition, parallel/perspective</i>	Sep 11	Lines, Polygons, Visibility in 3D <i>scan conversion, Z-buffer, BSP</i> Assg 1 given
Sep 16	Illumination, Shading, Shadows <i>uses, types</i>	Sep 18	Textures and Triangle Meshes <i>mapping, representation, transparency</i>
Sep 23	Computer Animation <i>overview, approaches</i>	Sep 25	Sampling and Filtering <i>aliasing: causes and fixes</i> Assg 1 due, Assg 2 given
Sep 30	Global Illumination <i>ray tracing, radiosity</i>	Oct 2	Volume Rendering <i>ray casting, isosurfaces</i> <i>transfer functions</i>
Oct 7	Parallel Graphics <i>sorting classification</i>	Oct 9	Programmable Shading <i>shaders, Cg</i> Assg 2 due, Assg 3 given
Oct 14	General-Purpose GPU Programming <i>linear algebra, CUDA</i>	Oct 16	Surface Reconstruction <i>acquisition, alpha shapes</i>
Oct 21	Midterm Exam	Oct 23	Geometric Modeling <i>discrete operators, Laplacian, smoothing</i>
Oct 28	Discrete Differential Geometry <i>mesh processing and editing</i>	Oct 30	Level of Detail for 3D Meshes <i>operators, algorithms, error</i> Assg 3 due, Assg 4 given
Nov 4	Implicit Modeling <i>metaballs, blobby models</i>	Nov 6	Implicit Modeling <i>radial-basis functions</i>
Nov 11	Parametric and Procedural Modeling <i>Bezier, splines, L-systems</i>	Nov 13	Rendering Basis Functions <i>spherical harmonic lighting</i>
Nov 18	Pre-Computed Radiance Transfer <i>mid-range, subsurface, triple product</i>	Nov 20	High-Dynamic Range Graphics <i>images, lighting, tone-mapping</i> Assg 4 due
Nov 25	Non-Photorealistic Rendering <i>NPR illustration, lighting</i>	Dec 2	Point-based Rendering <i>Surfels, Qsplat, Statistical techniques</i>
Dec 4	Lighting Design <i>cinematic effects and light placement</i>	Dec 9	Salient Visualization <i>saliency, enhancement, uses</i>
Dec 11	Wrap-up Review	Dec 16	Final Exam 8:00am – 10:00am