

Lecture #1: Tuesday, 5 January 1999
Topics: Course Outline
Lecturer: Leonidas Guibas

Course Outline

January

- Tue 5 Administrivia. Course Outline and Mechanics; Notations for Points, Vectors, and Transformations. Homogeneous Coordinates; Transformations, and Matrices.
- Thu 7 Affine and Projective Geometries.
- Tue 12 Rotations via Quaternions.
Homework 1 out.
- Thu 14 Polynomial Interpolation and Elimination.
- Tue *19 Issues in Shape Modeling; Parametric and Implicit Representations of Curves and Surfaces.
- Thu 21 Classification of the Parametric Cubics.
- Tue 26 The Polar Forms of Polynomial Curves; the Bézier Control Points; the de Casteljau Subdivision Algorithm.
Homework 1 due; Homework 2 out.
- Thu 28 Continuity Constraints for Polynomial Arcs; Splines.

February

- Tue 2 Splined Curves: B-Splines and Others.
- Thu 4 Rational Curves.
- Tue 9 Tensor-Product and Total-Degree Surfaces.
Homework 2 due; Homework 3 out.
- Thu 11 Solid Modeling and Boundary Representations for Solids.

- Tue 16 Binary-Space-Partition (BSP) Trees.
- Thu 18 Other Hierarchical Representations for Surfaces and Solids.
- Tue 23 Surface Simplification.
Homework 3 due; Project (Homework 4) out.
- Thu 25 Scattered 3-D Data Interpolation.

March

- Tue 2 Visibility and Visibility Orderings. Class contribution due.
- Thu 4 Hidden Surface Removal Algorithms.
- Tue *9 Algorithms for the Intersection of Geometric Objects.
Project due.
- Thu *11 Discussion of projects and student contributions.
- Thu 18 Final Examination.

A '*' indicates dates on which the lectures will be given by an alternate lecturer, because Professor Guibas will be out of town.