

COURSE DESCRIPTION

Department and Course Number **CS 475** Course Coordinator **Sloan**

Course Title **Visualization** Total Credits **3**

Current Catalog Description

Advanced Computer Graphics techniques aimed at “Scientific Visualization” applications.

Textbook

The Visualization Toolkit, 3rd ed., by Will Schroeder, Ken Martin, and Bill Lorensen, Kitware, 2003.

References *None*

Course Goals

Gain expertise in a particular Visualization system (VTK). Build a significant project which communicates large amounts of data (from any source - preferably a research project run by someone else) using computer visualization tools. Prepare students to act as Viz experts as part of an interdisciplinary team.

Prerequisites by Topic

Computer Graphics (useful, but not required)

Major Topics Covered in the Course

Definition of "visualization," Computer Graphics basics, Visualization Pipeline, Basic Data Representations, Fundamental Algorithms, Advanced Data Representations, Advanced Algorithms, Image Processing, Applications

Laboratory projects (specify number of weeks on each)

*4 structured assignments - 1 week each
1 major project - 10 weeks*

Estimate CSAB Category Content

	CORE	ADVANCED		CORE	ADVANCED
Data Structures	_____	_____	Computer Organization and Architecture	_____	_____
Algorithms			Concepts of Programming Languages		
Software Design	_____	20		_____	_____

Oral and Written Communications

Every student is required to submit at least 1 written report (not including exams, tests, quizzes, or commented programs) of typically 15 pages and to make 1 oral presentation of typically 20 minutes duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.

Social and Ethical Issues

None

Theoretical Content

None

Problem Analysis

The project has a significant analysis component.

Solution Design

The project has a significant design component.