

School of Continuing Studies
Computer Science 395:
Advanced to Computer Graphics
Seminar in Current and Classical Computer Graphics Research

Instructor: Amy Gooch

CS 395 is an advanced seminar course in computer graphics. It serves as an introduction to advanced topics and research in the field. There is far too much to graphics today to cover everything in depth, instead the course strives to cover most things in breadth, and a few in depth.

One of my goals with this course is to aid students in the MCIS degree program who seek to do their thesis in the area of computer graphics. This course will provide a head start towards finding a topic for a thesis project.

Class Meetings

Saturday, 9am to 12pm
Department of Computer Science, 1890 Maple Avenue
Room to be announced.
First class: January 10th, 2004
Last class: March 13th, 2004
Holiday: TBA

Web page: <http://www.cs.northwestern.edu/amygooch/cs395>

Optional Textbooks:

A. Watt, 3D Computer Graphics, 3rd edition, Addison-Wesley.

The textbook forms a great introduction to many of the topic areas. In some cases, it goes into too much detail, but then so do other textbooks. We will also be assigning you a few papers to read each week which we expect you to discuss in class. It isn't necessary to understand everything, but it is necessary for you to know what it is you don't understand. That knowledge should give rise to questions in class.

Prerequisites:

A willingness to learn and read a lot of technical papers is the only requirement. (CS 351 is not a prerequisite, but may help to have background knowledge in computer graphics).

Lectures:

Every week will begin with a 45 minute introduction to a research area by one of the professors. This will be followed by three presentations of in-depth topics within that area by students, with accompanying discussion.

Coursework:

Participating in reading and discussions is extremely important in this course. We may give pop quizzes to check whether or not you have truly read the week's papers. These quizzes will be trivial for you if you have read the paper. In addition to participating in discussions, you will be expected to participate in two ways. First, over the quarter you

will present several assigned research papers making a Powerpoint or web-based presentation (5 to 15 minutes each) We will post your presentation afterwards onto the class website. Second, you will do a project. For most of you, this will be a more in depth survey of a research topic of your choosing. This survey will take the form of a paper you turn in at the end of the quarter. If you are particularly enthusiastic and the scope of the class permits, you may substitute a coding project for your paper survey(s). This may be performed individually or in groups. This must be discussed beforehand with a professor who will decide whether or not such a project can be completed within the quarter. We will not accept projects that have not been discussed beforehand with the professors. The discussion will culminate in a written project proposal which will assign grading weight to each project component.

At the beginning of each class, each student will bring in the following with regard to the reading assignment:

- 1) What they found to be the most interesting in the reading
- 2) What they were the most confused about or would like to know more about

Course Evaluation:

The proportion of the final mark associated with the different components of the course is as follows:

Participation 15%

Presentation 35%

Project 50%

Schedule: Topics Covered, one per class:

- Photorealistic Rendering (Classical Papers)
- Photorealistic Rendering (Hot topics & New Research)
- Non-Photorealistic Rendering
- Image Based techniques (High Dynamic Range and Image Compositing)
- Texture Synthesis
- Modeling
- Perception, Manipulation, and Immersive Environments
- Hardware Rendering
- Animation
- Simulation and Dynamics

See Web page: <http://www.cs.northwestern.edu/amygooch/cs395/>