EE 7000-2 (Spring 2009) Graphics and Visual Computing

Course Webpage: http://www.ece.lsu.edu/xinli/teaching/EE7000_XinLi_Spring2009.pdf

Instructor: **Xin (Shane) Li** (Email: xinli@lsu.edu URL: www.ece.lsu.edu/xinli)

Lectures: MW 3:40pm-5:00pm, 220 Tureaud Hall

Office Hours: MW 1pm-3:30pm, 313 Electrical Engineering Building

Course Description:

- To provide a comprehensive knowledge on computer graphics algorithms, techniques, and applications for modeling, simulation, animation, rendering and other key elements of visual computing.
- An advanced graduate course, but basic computer graphics knowledge will be briefly covered.
- Good math background and programming skills could easily follow it.

Prerequisites:

- Basic calculus and linear algebra (vectors and matrices)
- Programming experience: this course requires substantial programming effort!
  - Standard programming concepts and data structures will be used frequently.
  - You are expected to be very familiar with C/C++ programming.
- Having knowledge of OpenGL programming be a plus
- Please speak to the instructor if you are not sure about your background knowledge and course prerequisites.

Tentative Contents:

1. Basic computer graphics pipeline, basic OpenGL programming
2. Mesh structure: how to store, represent, and render geometric objects
3. Graphics modeling system, Graphics User Interface design, build your own GUI
4. Texture mapping, environmental mapping and rendering
5. Basic graphics application topics in visual computing: particle system simulation, collision detection, shape matching, skeleton-driven animation…

Homework and exams:

1. One warm-up assignment
2. Three or Four regular homework assignments
3. One final project (with a midterm presentation and a final presentation)
4. No Exam

Final Project Topics:

Please talk to the instructor to select your final project topic (usually you will need to implement a paper). Topics include deformation, animation, collision detection, shape comparison and retrieval, shape editing, texture synthesis, feature extraction and so on. If you have your own project idea that you want to work on, you are encouraged to discuss with the instructor.

Grading:

Attendance (10%), Final Project (35%), Homework (8%+10%+10%+12%+15%)