COMP 5400, Fundamentals of Computer Graphics

Credit hours: 3 lecture
Contact hours: 3 lecture

Catalog Description: Graphics hardware and software components, coordinate systems, 2-D and 3-D transformations, 3-D viewing and projection, clipping and windowing, scan conversion and algorithms, visibility determination and shadowing, and software projects using a graphics software package.

Prerequisites: COMP 2710 and MATH 2660
Corequisites: None

Selected Elective Course (CSCI, SWEN, WIRS)

Instructor or Course Coordinator: Dr. Kai Chang

Required Textbook

Reference Materials
Edward Angel, *OpenGL – A Primer*, 2005

Course Outcomes
The student will be able to
- understand fundamentals of graphics hardware and software components.
- understand elements involved in constructing a graphics display.
- understand mathematics foundation and algorithms for graphics.
- design and implement a virtual world using a graphics package, e.g., OpenGL.
- design and implement an interactive graphics display and demonstration system.

Topics Covered
- Graphics Systems and Models (3 hours)
- Graphics Programming (3 hours)
- Geometric Objects and Transformations (6 hours)
- Input and Interaction (3 hours)
- Viewing (8 hours)
- Shading (7 hours)
- Implementation of a Renderer (7 hours)
- Hierarchical and Object-Oriented Graphics (3 hours)
- Discrete Techniques (2 hours)
- Exams (3 hours)

Course Requirements
- Programming assignments (40%)
- Exam 1 (20%)
- Exam 2 (20%)
- Final exam (20%)

Syllabus prepared: Spring 2016