**SPECIAL TOPIC COURSES FOR WINTER 2014**

CS 594/J. GUO (Section 1)SYSTEMS ENGINEERING

*The objective of this course is to provide the student with systems engineering theory with an emphasis on the following topics: the systems engineering process, requirements, design fundamentals, subsystem fundamentals, trade studies, integration, technical reviews, case studies and ethics. The course is also intended to prepare the student for the capstone design/thesis course.*

*Additional learning objectives include: 1) to develop a systems engineering perspective of how software/hardware system are conceived, developed and implemented; 2) to establish and mature the knowledge and comprehension of the value and purpose of systems engineering; 3) to establish a working knowledge of the methods and tools systems engineers use; and 4) to understand the roles of systems engineers and develop the ability to contribute to the development of complex software/hardware systems.*

CS 454/R.PAMULA (Section 1) For Graduate Students. See Course Description for CS 370 and time module.

CS 454 – J.TRAN (Section 2) Large-Scale Data Analysis and Visualization

Prerequisite: CS312

In this course we will study theory, algorithms and practice of large scale (“Big Data”) analysis and visualization.

The era of "Big Data" has arrived. This phenomenon is a derivative of the ever-increasing amounts of data generated in scientific and business domains, and we must keep afloat with our relatively limited perceptual and cognitive abilities. Two recognized approaches in this field are management of a large-scale datasets efficiently through the use of distributed data analysis algorithms and reliance on cognitively salient data visualization methodology.

First, large-scale data management is an evolving field. However, enabling and maturing technologies, such as map-reduce, offer hope to seemingly hopeless data explosions. This approach is largely driven by the availability of ubiquitous cloud computing platforms. Second, visualization provides a means of combating information overload, as a well-designed visual encoding can supplant cognitive calculations with simpler perceptual inferences and improve comprehension, memory, and decision-making. Furthermore, visual representations may help engage more diverse audiences in the process of analytic thinking.

In this course, we will study algorithms and techniques for managing and visualizing a large-scale dataset. We utilize a map-reduce technology called Hadoop as a primary means to process and analyze large datasets. Our approach to effective visualizations is based on principles from graphic design, the visual arts, efficient visualization algorithms, and cohesive information dashboard design. The course is targeted both towards students interested in the analysis of large-scale datasets using visualization in their own work, as well as students interested in building better visualization tools and systems.

CS454 – S. STOKES (Section 3) Mobile and Cloud Computing (Windows)

Essentials of Developing Windows Apps

Each week the students are required to design two apps and get them certified in the store