Fall 2018 – CS Special Topics Courses

1. CS 491 - Virtual, Augmented and Mixed Reality
2. CS 491 - High-Performance Concurrent Computing
3. CS 594 – Visual Data Science
4. CS 594 – Empirical Methods in Human-Centered Computing
5. CS 594 – Artificial Intelligence Safety

**CS 491 - Virtual, Augmented and Mixed Reality**
- Instructor: Prof. Johnson
- Meeting time: TR 11-1215
- CRNs: 30757 (ugrad) & 30285 (grad)
- Course page: [https://www.evl.uic.edu/aej/491/](https://www.evl.uic.edu/aej/491/)
- Notes: Undergrads have to submit modification of major to use this as technical elective

Learn about virtual and augmented reality hardware and software and how to develop applications that take advantage of their unique affordances

**CS 491 - High-Performance Concurrent Computing**
- Instructor: Prof. Eriksson
- Meeting time: TR 1230-145
- CRNs: 38956 (ugrad) & 38963 (grad)
- Notes: Undergrads have to submit modification of major to use this as technical elective

The course objective is to provide a good understanding of how fast you might expect a small program to run, what might cause it to go much slower, and how to make the program go as fast as possible, usually without changing or even discussing the underlying complexity of the algorithm. In other words, this course is about the minimizing the constants that complexity analysis ignores.

To achieve this goal, we will study, evaluate and experiment with concurrent computing in several forms, as it exists in common off-the-shelf computers today: pthreads, lock designs and lock-free data structures, hyper-threading, multi-core, multi-socket, instruction-level, vectorized, and GPGPU parallelism, and more. The course will consist primarily of several large projects, with accompanying lectures covering the topics necessary to complete each project, as well as mid-term and final exams.

For undergraduates, CS 361 Computer Systems is a pre-requisite, or consent of instructor. For graduate students, a good understanding of low-level C programming and debugging, and some experience with multi-threading and synchronization, as well as assembly language programming is necessary.
CS 594 – Visual Data Science
- Instructor: Prof. Marai
- Meeting time: TR 2-315 pm
- CRNs: 29095
- Course page: https://www.evl.uic.edu/cs594/

This course is an introduction to key design principles and techniques for interactively visualizing and analyzing data in data science. The major goals of this course are to understand how human perception and cognition can help in the analysis and understanding of complex data, how to design and evaluate effective visual representations of data to support analysis, how to tell a compelling data story, and how to create your own interactive visual data analysis using web-based frameworks.

CS 594 – Empirical Methods in Human-Centered Computing
- Instructor: Prof. Chattopadhyay
- Meeting time: MW 430-545 pm
- CRNs: 42607

Learn empirical methods, such as experiment design, hypothesis testing, grounded theory, and log analysis to (1) systematically evaluate human-computer interactions and (2) drive design innovation of human-centered computing systems.

CS 594 – Artificial Intelligence Safety
- Instructor: Prof. Ziebart
- Meeting time: W 6-830 pm
- CRNs: 40393

Whether advances in artificial intelligence will be harnessed for the good of individuals and societies, will cause existential risks for humanity, or lead to something in-between is a matter of frequent debate. This course seeks to expose research-focused students working in artificial intelligence, broadly construed, to the societal concerns surrounding artificial intelligence and technical problems that arise from those concerns. We will focus on open problems and research problems relating to the robustness, fairness, privacy, and transparency of artificial intelligence systems.