Spring 2016 Computer Science Advising Newsletter

CS 261 and CS 240
As you know, CS 159 is a prereq for both CS 240 and CS 261, both of which you should complete during your sophomore year. You will find that there are four sections of CS 240 in the fall; everyone who is completing CS 159 should enroll in CS 240. You will also find that there are two sections of CS 261. Not everyone who is completing CS 159 this semester will be able to take CS 261 because there are not enough seats. This is not a problem. There will be two more sections of CS 261 in the spring, so everyone can finish this course during their sophomore year. However, there will be a problem if only a few people sign up for CS 261 in the fall because then there won’t be room for everyone in the spring. Please decide about registering for CS 261 in the fall based on the following considerations.

• If you started the CS major late, then you should take CS 261 in the fall.
• If you are considering doing the five-year MS program in forensics, then you should take CS 261 in the fall.
• If you are planning on doing the InfoSec certificate, then you should take CS 261 in the fall.
• If you are finding the CS curriculum challenging and you would like to spread out your course work so that you have fewer hard CS courses at one time, you should take CS 261 in the spring.
• If you have a double major or a minor and there are courses from your non-CS major or minor that you need to take in the fall, then you should take CS 261 in the spring.

If none of these considerations apply to you, then flip a coin to decide whether to take CS 261 in the fall.

CS 260
We have had a backlog in CS 260 for a while, but we have been offering extra and larger sections and we expect the backlog to be taken care of this fall. However, it still may be the case that you cannot get into CS 260 this fall because we are not sure how big the remaining backlog is. Be assured that there will be two or three more sections in the spring and we will soon retire the backlog.

Electives
CS 330 is available but may be cancelled if we can’t find anyone to teach it. Plan accordingly.

The following descriptions should help you choose which (if any) electives to take this fall.

CS 347 Web-Based Information Systems covers the theory and practice of building systems for deployment on the Web. Students study concepts and protocols that form the Web, as well as principles of design, development, and deployment of Web applications. Students work in project teams to develop unique Web applications using a representative suite of Java-based development tools. (Grove)
CS 354 Introduction to Autonomous Robotics. Until recently, robots that can act independently in complex environments have only existed in research labs and science fiction films. That situation is changing. Self-driving cars are already being tested on the roads. NASA’s rovers autonomously navigate across the surface of Mars.

The focus in this course is on learning to program autonomous robots. Specific topics will include localization, mapping, kinematics, path planning and computer vision. This will be a hands-on programming course with a substantial final project. Note that this course will not address the problems of designing or building robots. We will work with existing robots that are programmed using a high-level development environment. (Sprague)

CS 447 Interaction Design. While well-trained software engineers are prepared to design reliable and efficient computer systems, they rarely have a technical understanding of the people who will ultimately be part of these systems, and they have not generally learned how to design and evaluate successful human-oriented systems. Interaction Design seeks to close these gaps, first by exploring the critical characteristics of system users, and then by defining and applying a methodology by which effective, user-centered system designs can be achieved. (Frysinger)

CS 457 Information Security. Our society has grown increasingly digitized and the fast and automatic generation, processing, and distribution of digital photos, text, financial and personal documents have brought us great convenience and significantly enriched our lives. Less noticeable are the fragility of digital data, the easy abuse of digital data by malicious adversaries with computer programs, and the prospect of an Orwellian society.

CS 457 is going to irreversibly change your view on data security. In this course, you will develop a hacking mindset and experiment with the art, science, engineering, and business natures of information security. By exploring in projects how deep the rabbit hole of digital insecurity may go, you will understand that it is surprisingly hard, but not impossible, to build a secure digital utopia. This course may open a new door for you to integrate your ideals, ingenuity, career, and patriotism. (Wang)

CS 432 Compilers. Have you ever wondered how gcc or javac works? Compilers such as these are complex software systems that apply a lot of neat theory to the problem of automatic program translation. In this course, we will explore many aspects of compiler theory and implementation. Among other topics, we will discuss finite state machines, recursive descent and bottom-up parsers, abstract syntax trees, intermediate representations, and code generation. As a semester-long project, you will develop an actual compiler for a simple language, giving you valuable experience to discuss during job interviews. Prerequisite: CS 327 and CS 361 with C- or better. (Lam) [This course counts as a system elective.]

CS 480 Topics in Computer Science: Embedded Systems. How can we apply principles of computing to impact the physical world? How can we model cyber-physical interactions and analyze them for safety? What issues and challenges, either technical or social, arise when we leverage code to control real world phenomena? In this course, we will address these questions and examine how to blend computation with physical processes. Students in this course will learn about characteristics of embedded systems and the application of
computing principles to cyber-physical interactions, as well as modeling and design methodologies, systems support, and optimization. The course will emphasize both the practical and theoretical aspects of the field, and students will gain experience with popular tools and platforms for embedded computing.

Topics that will be covered include:
- hardware and electronics fundamentals
- pervasive computing and sensor networks
- discrete and continuous dynamics
- digital signal processing
- concurrent models of computation
- model checking
- wireless and power-line networking
- real-time OS
- code analysis and optimization techniques

This course will be offered as a CS 480: Special Topics course in Spring 2014. The prerequisite for this course is CS 450 (Operating Systems) or special permission from the instructor. Course requirements include projects involving both the Arduino and Android platforms. As such, prior experience with both C and Java is required. (Kirkpatrick)

CS 482 Computer Forensics. Have you ever wanted to find out how to:
- recover "deleted" files from a disk or thumb drive?
- secure digital evidence from computers and mobile devices?
- solve cyber crimes?
- analyze malicious code?

If you answered "Yes!" to any of those questions, you should take CS 482: Computer Forensics next fall. If you answered "No" but reading this made you curious, you should also take the class. (Buchholz)

Advising Appointments

Freshmen and sophomores should see their advisors, but juniors and senior can stop by too.

Freshmen—You should visit your new major advisor to figure out your courses for fall and to plan your next several years in the CS major. If you are not sure who your advisor is, you can find out on ecampus.

Sophomores—Although it may seem like graduation is still a long way off, you need to see your advisor to make sure that you are on track to graduate on time. It is easy to miss a prerequisite and then be in a pinch towards the end.

Juniors—You should be on track and we will ask you to come by in the fall to make sure. If you have any doubt, drop in on your advisor.

Seniors—We will see you at graduation, but you can still stop by and let us know how your job search or graduate school application process is going.

Fall Enrollment Begins Wednesday, April 6th