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## FALL 2004 COMPUTER SCIENCE ELECTIVES

### Fundamentals of Computer Security:

CSCI 379 (MWF 11-12) Perrone

After a positive start with the half-credit computer security course offered this spring, Professor Perrone will be teaching the course as a full credit elective in the upcoming fall semester. In addition to covering the fundamentals of computer security, the aim of the course is to instill the growing need and importance of including secure protection in all levels of software and computer development. Topics covered in the course will include cryptography and cryptosystems, authentication, computer and network security, secure coding, privacy, and intrusion detection. The course will also give students some practical experience on networked Linux computers. As computer networks have become not only an integral part of our everyday lives, but an important tool for military and national security applications, the need for reliable security systems has become increasingly necessary. Students who are interested in more advanced applications of computer security can check out the resources link on the current CSCI379 course page.

### Capstone:

CSCI 479 (MWF 9-10) Meng

In the fall of 2004 Professor Meng will be teaching CSCI 479, a capstone course for computer science majors. Students will work in groups of 3-4 on a web search engine related project, going through the whole process of typical software project development. They will start by reviewing some software engineering literature in terms of how a group of software engineers work together, how to develop a piece of software successfully, what is a typical development cycle. The students then will go through the steps of feasibility study, software design, software development, testing, and product release. The end product is expected to be a search engine with some specific features.

Not open to CS & ENGR majors, typically requires senior standing

### Computer Architecture:

CSCI 320 (MWF 2-3, Lab T 10-12) Wenner

This course builds on the foundation gained in CSCI206, looking at architecture issues in more depth. The text is even written by the same authors. While in CSCI206 we talked about the design of the instruction set, multi-clock cycle and pipelined datapaths, etc., in this course you will actually do design. We will use a design tool called Verilog which allows you to define a circuit; Verilog then simulates the behavior of your circuit (and allows you to find your design flaws!) The simple MIPS processor with a single integer ALU (execution unit), that was the object of study in CSCI206, will be updated to modern architectures with multiple execution units. More advanced topics in cache memory design, I/O systems, and storage systems (RAID) will be studied. The design of multiprocessors and networks are two new topics in the course. The text (3rd edition of *Computer Architecture, A Quantitative Approach*) uses many real processors as examples.

Required for CS & ENGR majors, 300 elective for BSCS and BA majors. Prerequisite: CSCI206

### Theory of Computation:

CSCI 341 (MWF 10-11) Miranda

CSCI 341 covers the theoretical foundations of computer science. Students taking the course will understand why computers work and what are the limitations of computation, i.e. what problems cannot be solved with computers. The course includes the study of finite automata, context free grammars, push down automata, and Turing Machines. In the Fall 2004 semester, the class will spend some time talking about useful applications of the Theory of Computation such as queries in the WWW, and compilers. This is the perfect course to take for students planning to attend graduate school, as a large part of the Computer Science GRE is based on the material covered in this course.

Prerequisite: MATH280 or MATH241