COMPUTER ENGINEERING (4450)

4450:510. Embedded Scientific Computing. (3 Credits)
Prerequisite: Permission by Instructor. Organization of scientific and engineering problems for computer solutions. Analysis of error and convergence properties of algorithms.

4450:515. System Simulation. (3 Credits)
Computer simulation of dynamic systems. Discrete system stability. Linear multistep and Runge-Kutta methods, nonlinear systems, stiff systems, distributed systems and real-time computing.

4450:520. Object Oriented Design. (3 Credits)
Investigation of object-oriented design paradigm and the design implementation with the object-oriented programming language C++.

4450:521. Computer Systems Design. (3 Credits)

4450:522. Embedded Systems Interfacing. (3 Credits)
Prerequisite: Permission by instructor. Micro-controller structures and embedded peripherals. Interfaces to physical environments. Software access to peripherals, timers, ADCs and DACs. Synchronous and asynchronous communications. Interrupts. Real-time operating systems.

4450:523. Programmable Logic. (3 Credits)
Electronic circuitry considerations in logic circuits, methods of sequential, threshold logic analysis, synthesis, development of computer arithmetic elements; memory, storage devices,

4450:527. Computer Networks. (3 Credits)
Network architecture and protocol layering. Network design principles, communication protocols, and performance measures. Socket programming, routing, error detection and correction, access control, multimedia networking.

4450:540. Digital Signal Processing. (3 Credits)
Signal sampling and reconstruction; data-converter models. Unilateral and bilateral z transforms. Discrete Fourier Transform (DFT); Fast Fourier Transform (FFT). Digital filter structures and design methods.

4450:562. Analog Integrated Circuit Design. (3 Credits)
CMOS processes and layout; amplifiers, current mirrors, and comparators; current, voltage, and bandgap references; switched capacitor circuits. Frequency and noise analysis techniques.

4450:567. VLSI Circuits & Systems. (3 Credits)
Graduate level introduction to VLSI design. MOSFET structures, design rules, and fabrication. Static, dynamic CMOS. PLAs, ROMs, and RAMs. Layout methodologies and tools. System architecture.

4450:598. Special Topics: Computer Engineering. (1-3 Credits)
(May be taken more than once) Prerequisite: permission of department chair. Special topics in computer engineering.

4450:606. Computer Architecture. (3 Credits)

4450:607. Parallel Computer Architecture. (3 Credits)
Prerequisite: 4450:606 or equivalent. This course provides an introduction to parallel computer architectures and parallel processing based on a single instruction, message-passing, or shared memory.

4450:620. Real-time Scheduling. (3 Credits)
Theory of fixed priority scheduling for real-time systems. Aperiodic, Periodic, and Sporadic Task scheduling.

4450:629. Networked Embedded Systems. (3 Credits)
Foundations for design and deployment of asynchronous distributed systems. Wireless sensor-actuator systems. New frontiers in distributed systems including communication, localization, synchronization, failure detection and performance analysis.

4450:642. Advanced Knowledge Engineering. (3 Credits)
Prerequisite: permission of instructor. Advanced study of knowledge acquisition and expert system project management.

4450:663. VLSI Design & Automation. (3 Credits)

4450:693. Special Problems: Computer Engineering. (1-3 Credits)
(May be taken more than once) Prerequisite: permission of department chair. For a qualified graduate student. Supervised research or investigation in student’s major field. Credit depends upon nature and extent of project.

4450:794. Advanced Seminar. (1-3 Credits)
(May be taken more than once) Prerequisite: permission of department chair. Advanced level coverage of various topics. Intended for student seeking Ph.D. in engineering.