

COMPUTER ENGINEERING (CPE)

CPE 1502 Electrical and Computer Engineering Fundamentals (1 Credit)

This hands-on course introduces students to basic hardware and software platforms commonly used by Electrical Engineers and Computer Engineers.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%201502>)

CPE 3280 Microcontroller System Design (5 Credits)

Design of hardware and software for embedded systems using a modern microcontroller. Covers hardware interfacing including memory system design, interrupt interfacing, and use of internal and external peripheral devices. Emphasis is placed on programming of the microcontroller including device drivers, exception and interrupt handling, and interfacing with higher-level languages. Laboratory exercises require programming and hardware design.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%203280>)

CPE 3350 Operating Systems Programming (3 Credits)

Introduction to operating systems and systems programming. Surveys systems software; operating system interface and functions; utilities and shell programming; linkers and loaders; translators; and processes, concurrency and concurrent programming.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%203350>)

CPE 3550 Communication System Analysis (5 Credits)

An introduction to principles of modern communication systems with an emphasis on current technological applications. Covers basics such as transmission media, analog and digital signaling techniques, computer communication, TCP/IP network architecture, data encoding methods and multiplexing mechanisms. Modern communication protocols for networks are analyzed. High-level issues such as security and encryption are studied.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%203550>)

CPE 3760 Computer Organization and Assembly Language (5 Credits)

Studies organization and structuring of the major hardware components of computers. Includes mechanics of information transfer and control within a digital computer system. Introduces computer architecture, machine instruction sets and assembly language programming. Typically offered: Winter.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%203760>)

CPE 4211 Computer Engineering Senior Design I (3 Credits)

Study of mixed digital and analog system design, including embedded software design. Student teams begin a system level design of a project (a nondisclosure agreement may be required). Students provide detailed schedules for building prototype systems and present periodic progress reports. During the course, students produce a technical specification, undergo several design reviews and design a printed circuit board for a prototype system.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204211>)

CPE 4212 Computer Engineering Senior Design II (3 Credits)

Continued study of mixed digital and analog system design, including embedded software design. Student teams continue to implement and refine the prototype hardware and software designs from EE/CPE 4211. Teams write detailed technical reports and submit their designs to design reviews. Periodic progress reports and team presentations are required. Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204212>)

CPE 4350 Advanced Operating Systems (3 Credits)

Introduces the major functions of operating systems. Covers processes and concurrency; concurrent programming; resource allocation, contention and control; scheduling, memory management, and device management.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204350>)

CPE 4750 Computer Networks (5 Credits)

Recommended Prerequisite: CSC 2431. Studies concepts and terminology of computer networks, equipment, and protocols. Typically offered: Alternate Years, Spring.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204750>)

CPE 4760 Advanced Computer Architecture (5 Credits)

Recommended Prerequisite: CSC 2431. Studies the architecture of multiprocessor, pipelined, and parallel computers. Emphasis is placed on principles of instruction level parallelism, multi-core processing, and distributed computing.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204760>)

CPE 4899 Computer Engineering Capstone and Senior Design (3 Credits)

In this capstone course designs from EE 4212 are developed into a manufacturing prototype and tested. Covers testing methodology (hardware and software), debugging and documentation methodology. Teams author detailed technical documents. Periodic progress reports and final presentations are required. Includes study of vocation in engineering, writing reflective responses, and preparation of a portfolio of major projects students have finished.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204899>)

CPE 4900 Independent Study in Computer Engineering (1-5 Credit)

Independent study and research in an advanced computer engineering topic.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204900>)

CPE 4960 Senior Project in Computer Engineering (1-5 Credit)

Independent project and research in an advanced computer engineering topic.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204960>)

CPE 4970 Directed Research in Computer Engineering (2-5 Credit)

The student will conduct research based on a proposal prepared prior to registering for this course. Results of the research will be prepared for presentation at undergraduate or professional symposia.

Course Schedule (<https://catalog.spu.edu/course-search/?details&code=CPE%204970>)