

# Computer Engineering Tech (CPET)

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## Courses

### **CPET 1101 Intro to Engineering Comp Sci: 1 semester hour.**

Introduction to basic engineering, computer science and technology concepts. Students will become aware of the various disciplines of engineering, computer science and technology, ethical responsibilities in these fields, creativity and design.

Co-requisite: CPET 1102.

### **CPET 1102 Intro to CPET Lab: 1 semester hour.**

Introduction to the field of engineering technology, the curriculum, the basic skills of problem solving, and hands-on experiments, the basic concepts and applications on computer technology.

Co-requisite: CPET 1101.

### **CPET 1301 Computer Applications in Engineering Technology I: 3 semester hours.**

Development of logical step by step approach to analyze and solve computing problems in engineering technology. Introduction of programming languages. Familiarization and use of software tools such as MATLAB in the area of electronics, signals, and telecommunications through assignments and team projects.

### **CPET 1302 Computer Application to Engineering Technology II: 3 semester hours.**

A continuation of CPET 1013 in C++ programming techniques, programming languages, screen editor, and ORCAD software. Development of techniques and skills in statistical analysis, simulated software and related scientific software packages included.

Prerequisites: CPET 1013 or CPET 1301.

### **CPET 2111 Digital Logic Laboratory: 1 semester hour.**

Laboratory experiments and reports in combinational and sequential logic using logic gates and flip-flops, and other logic devices. Experiments stress applications in Computer Engineering Technology.

Prerequisites: CPET 2113 (may be taken concurrently).

### **CPET 2311 Digital Logic Cir: 0 semester hours.**

Digital logic with topics in number systems and codes, Boolean algebra and logic minimization methods, and combinational and sequential logic using logic gates and flip flops and other logic devices. Applications in Computer Engineering Technology are stressed.

### **CPET 2350 Mathematical Applications for Technology: 3 semester hours.**

A survey of appropriate concepts and techniques from methods with applications to the solution of problems in technology.

Prerequisites: MATH 2024 or MATH 2414.

### **CPET 3116 Computer Architecture Lab: 1 semester hour.**

Laboratory experiments to determine performance characteristics of commercially available microcomputers. Write codes for 8-bit through 32-bit processors to exercise the hardware.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and (CPET 3316 or CPET 3163).

### **CPET 3123 Microprocessor Assembly Language Laboratory: 1 semester hour.**

Exploring the Intel processor registers, their functionalities and responsibilities in computations, tracing individual instruction executions in debug mode, dedicated memory segments and address spaces in real and protected modes, microprocessor programming in solving engineering technology problems and program analysis at microprocessor level.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and (CPET 3323 or CPET 3233).

### **CPET 3301 Software Engineering Technology I: 3 semester hours.**

Using Software models, technical problem analysis, UML design and development, implementation and testing. Case studies of software technology.

Implementation of designs using a high level programming language for software and hardware design. Advanced concepts in a high level programming language manipulating files, tasking and real time interfacing with the computer hardware.

Prerequisites: CPET 1023.

### **CPET 3316 Computer Architecture: 3 semester hours.**

The performance characteristics of commercially available computers. Students will study 8-bit through 32-bit processors. Selection and use of processors.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and (CPET 3116 or CPET 3161).

### **CPET 3323 Microprocessor Assembly Language: 3 semester hours.**

Microprocessor level data represented in binary and hexadecimal formats, Intel 32-bit architecture, real and protected mode address spaces, processor-memory working relationship, Intel programming mnemonics, program design and microprocessor level programming for solving engineering technology applications.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and (CPET 3123 or CPET 3231).

### **CPET 3333 Cooperative Education II: 3 semester hours.**

A cooperative arrangement between the university and a company or government agency that provides experiences for students majoring in Computer Engineering Technology II. The work assignment must be commensurate with the student's major. A subsequent report is required.

**CPET 4105 Computer Systems Design Laboratory: 1 semester hour.**

Experiments involving interface logic and programmable I/O devices for microprocessor base systems. The course will introduce- based systems. Introduce system design CAD tools, simulation, verification and synthesis.

Prerequisites: CPET 3116 or CPET 3161 and (CPET 3316 or CPET 3163) and CPET 4305 (may be taken concurrently).

**CPET 4106 Data Communication Methods Laboratory: 1 semester hour.**

Laboratory experiments in data communication devices. Modems, multiplexers, concentrators, protocols, error checking, front-end processors, USARTS, simplex/duplex transmission, and telecommunications.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and (CPET 2350 or CPET 2503) and CPET 4306 (may be taken concurrently).

**CPET 4136 Computer Networking Laboratory: 1 semester hour.**

Experiments and reports involving the hardware and software for computer networks. Experimental topics include LANS, W ANS, networking components and techniques, standards and protocols, and networks on a chip.

Prerequisites: CPET 4106 or CPET 4061 and (CPET 4306 or CPET 4063) and CPET 4336 (may be taken concurrently).

**CPET 4138 Digital Signal Processing Applications Laboratory: 1 semester hour.**

Experiments in Signal Processing using commercial DSP processors for performing various image and speech processing tasks. Emphasis on learning DSP programming techniques.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and CPET 4338 (may be taken concurrently).

**CPET 4208 Senior Project I: 0 semester hours.**

A two-semester sequence for individual projects supervised by a faculty member of the department. The portions of the first semester course (4082) are devoted to group discussion of professional aspects of engineering ethics, research protocols, and patent considerations. A written proposal describing the project is required. Oral presentation throughout the semester on the research project using a conference style format.

**CPET 4209 Senior Project II: 0 semester hours.**

A two-semester sequence for individual and/or team projects supervised by a faculty member of the department. The portions of the second semester course (4092) are devoted to group discussion of professional aspects of engineering technology: research writing, engineering ethics, research protocols, patent considerations. A written proposal describing the project is required. Oral presentations throughout the semester on the research project using culminating in a final written report.

Prerequisites: CPET 4208 or CPET 4082.

**CPET 4305 Computer Systems Design: 3 semester hours.**

Study of modern digital design methodologies, operation, arithmetic operations, and the study of advanced analysis on microprocessor software engineering systems.

Prerequisites: CPET 3116 or CPET 3161 and (CPET 3316 or CPET 3163) and CPET 4105 (may be taken concurrently).

**CPET 4306 Data Communication Methods: 3 semester hours.**

Functional and operational aspects of data communication devices and software, including modems, control units, multiplexers, concentrators, front-end processors, codes and procedures, protocols, error checking, and networking.

Prerequisites: CPET 2311 or CPET 2113 and CPET 2111 and (CPET 2350 or CPET 2503) and CPET 4106 (may be taken concurrently).

**CPET 4310 Special Topics: 3 semester hours.**

Selected current and emerging topics in Engineering Technology.

**CPET 4336 Computer Networking: 3 semester hours.**

A study of the hardware and software in computer networks. Topics include LANS, W ANS, networking components and techniques, standards and protocols, networks on a chip, and networking trends.

Prerequisites: CPET 4106 or CPET 4061 and (CPET 4306 or CPET 4063) and CPET 4136 (may be taken concurrently).

**CPET 4338 Digital Signal Processing Applications: 3 semester hours.**

Analog-to-digital and digital-to-analog conversion, discrete-time systems, discrete Fourier Transforms, applications in areas of speech recognition, and digital image processing. Architecture and programming of DSP processors.

Prerequisites: CPET 2111 and (CPET 2311 or CPET 2113) and CPET 4138 (may be taken concurrently).

**CPET 4399 Independent Study: 1 semester hour.**

Reading, research, and/or laboratory work on selected topics in Engineering Technology.