Computer Engineering Tech (CPET)

Courses

**CPET 1011 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 1021 (http://catalog.pvamu.edu/search/?P=CPET%201021).

**CPET 1013 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 1021 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 1011 (http://catalog.pvamu.edu/search/?P=CPET%201011).

**CPET 1023 Computer Application to Engineering Technology II: 3 semester hours.**
A continuation of CPET 1013 (http://catalog.pvamu.edu/search/?P=CPET%201013) 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 (http://catalog.pvamu.edu/search/?P=CPET%201013).

**CPET 2006 Cooperative Education I: 6 semester hours.**
A cooperative arrangement between the University and a company or government agency that provides experiences for students majoring in Computer Engineering Technology. The work assignment must be commensurate with the student’s major. A subsequent written report is required.

**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 (http://catalog.pvamu.edu/search/?P=CPET%202113) (may be taken concurrently).

**CPET 2113 Digital Logic Circuits: 3 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.
Co-requisite: CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111).

**CPET 2503 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 (http://catalog.pvamu.edu/search/?P=MATH%202024).

**CPET 3013 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 (http://catalog.pvamu.edu/search/?P=CPET%201023).

**CPET 3161 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 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 3163 (http://catalog.pvamu.edu/search/?P=CPET%203163) (may be taken concurrently).

**CPET 3163 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 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 3161 (http://catalog.pvamu.edu/search/?P=CPET%203161) (may be taken concurrently).

**CPET 3231 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 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 3233 (http://catalog.pvamu.edu/search/?P=CPET%203233) (may be taken concurrently).
CPET 3233 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 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 3231 (http://catalog.pvamu.edu/search/?P=CPET%203231) (may be taken concurrently).

CPET 3251 Digital Hardware Design Laboratory: 1 semester hour.
Laboratory experiments in design of digital computers and computer controlled devices. The internal operation of a microprocessor and computer. Registers and timing control, programmable gate arrays, processor switches as computer models. Prerequisites: CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 3251 (http://catalog.pvamu.edu/search/?P=CPET%203251) (may be taken concurrently).

CPET 3253 Digital Hardware Design: 3 semester hours.
Basic concepts used on the design of digital computers and computer-controlled devices. The internal operation of a microprocessor and computer. Registers and timing control, programmable gate arrays, array processors as computer models. Students will use individual board computers for doing simulation. Prerequisites: CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 3251 (http://catalog.pvamu.edu/search/?P=CPET%203251) (may be taken concurrently).

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 4013 Operating Systems: 3 semester hours.
Operating system structure, kernel and service programs, process scheduling, parallel processes, synchronization techniques, memory management, virtual memory, input/output, storage management, file systems. Prerequisites: CPET 1023 (http://catalog.pvamu.edu/search/?P=CPET%201023) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113).

CPET 4051 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 3161 (http://catalog.pvamu.edu/search/?P=CPET%203161) and CPET 3163 (http://catalog.pvamu.edu/search/?P=CPET%203163) and CPET 4051 (http://catalog.pvamu.edu/search/?P=CPET%204051) (may be taken concurrently).

CPET 4053 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 3161 (http://catalog.pvamu.edu/search/?P=CPET%203161) and CPET 3163 (http://catalog.pvamu.edu/search/?P=CPET%203163) and CPET 4051 (http://catalog.pvamu.edu/search/?P=CPET%204051) (may be taken concurrently).

CPET 4061 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 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 2503 (http://catalog.pvamu.edu/search/?P=CPET%202503) and CPET 4063 (http://catalog.pvamu.edu/search/?P=CPET%204063) (may be taken concurrently).

CPET 4063 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 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2503 (http://catalog.pvamu.edu/search/?P=CPET%202503) and CPET 4061 (http://catalog.pvamu.edu/search/?P=CPET%204061) (may be taken concurrently).

CPET 4082 Senior Project I: 2 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. Prerequisites: CPET 4082 (http://catalog.pvamu.edu/search/?P=CPET%204082).
CPET 4103 Special Topics: 3 semester hours.
Selected current and emerging topics in Engineering Technology.

CPET 4111 Applications of Microprocessor Software Laboratory: 1 semester hour.
Exercises in industrial applications programs. Use of micro assemblers to write floating point mathematical routines, special purposes languages. Engineering Technology applications are stressed.
Prerequisites: CPET 3231 (http://catalog.pvamu.edu/search/?P=CPET%203231) and CPET 3233 (http://catalog.pvamu.edu/search/?P=CPET%203233) and CPET 4113 (http://catalog.pvamu.edu/search/?P=CPET%204113) (may be taken concurrently).

CPET 4113 Software Applications of Microprocessors: 3 semester hours.
Assembler-level programming of microprocessors and microcomputers with emphasis on writing industrial application programs. Use of micro assemblers to write floating point mathematical routines, special purpose languages, simulate other microprocessor instructions sets, generate relocatable code, and linking leaders. Applications for Engineering Technology are stressed.
Prerequisites: CPET 3231 (http://catalog.pvamu.edu/search/?P=CPET%203231) and CPET 3233 (http://catalog.pvamu.edu/search/?P=CPET%203233) and CPET 4111 (http://catalog.pvamu.edu/search/?P=CPET%204111) (may be taken concurrently).

CPET 4151 Micro Computer Peripheral Hardware Laboratory: 1 semester hour.
Hands-on experiments on micro computer peripheral, such as memory, I/O devices, interrupts, and etc.
Prerequisites: CPET 3161 (http://catalog.pvamu.edu/search/?P=CPET%203161) and CPET 3163 (http://catalog.pvamu.edu/search/?P=CPET%203163) and CPET 4153 (http://catalog.pvamu.edu/search/?P=CPET%204153) (may be taken concurrently).

CPET 4153 Micro Computer Peripheral Hardware: 3 semester hours.
The elements of microprocessor peripheral hardware and its interfacing. Students will configure and construct microprocessor systems. Topics include series and parallel I/O devices, DMA and interrupt control devices, bus arbitration, and memory management units.
Prerequisites: CPET 3161 (http://catalog.pvamu.edu/search/?P=CPET%203161) and CPET 3163 (http://catalog.pvamu.edu/search/?P=CPET%203163) and CPET 4151 (http://catalog.pvamu.edu/search/?P=CPET%204151) (may be taken concurrently).

CPET 4361 Computer Networking Laboratory: 1 semester hour.
Experiments and reports involving the hardware and software for computer networks. Experimental topics include LANS, WANS, networking components and techniques, standards and protocols, and networks on a chip.
Prerequisites: CPET 4061 (http://catalog.pvamu.edu/search/?P=CPET%204061) and CPET 4063 (http://catalog.pvamu.edu/search/?P=CPET%204063) and CPET 4363 (http://catalog.pvamu.edu/search/?P=CPET%204363) (may be taken concurrently).

CPET 4363 Computer Networking: 3 semester hours.
A study of the hardware and software in computer networks. Topics include LANS, WANS, networking components and techniques, standards and protocols, networks on a chip, and networking trends.
Prerequisites: CPET 4061 (http://catalog.pvamu.edu/search/?P=CPET%204061) and CPET 4063 (http://catalog.pvamu.edu/search/?P=CPET%204063) and CPET 4361 (http://catalog.pvamu.edu/search/?P=CPET%204361) (may be taken concurrently).

CPET 4381 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 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 4383 (http://catalog.pvamu.edu/search/?P=CPET%204383) (may be taken concurrently).

CPET 4383 Digital Signal Processing Applications: 3 semester hours.
Prerequisites: CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 4381 (http://catalog.pvamu.edu/search/?P=CPET%204381) (may be taken concurrently).

CPET 4391 Programmable Microcontrollers Laboratory: 1 semester hour.
Laboratory experiments using microcontrollers to control various devices. Read input from sensors, perform analysis through software, and then provide corresponding control signals. Interfacing microcontrollers to computers.
Prerequisites: CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 4393 (http://catalog.pvamu.edu/search/?P=CPET%204393) (may be taken concurrently).

CPET 4393 Programmable Microcontrollers: 3 semester hours.
Introduction to programmable microcontrollers, application of microcontrollers in industrial environment for controlling machines and devices. Downloading control software to microcontrollers from computers.
Prerequisites: CPET 2111 (http://catalog.pvamu.edu/search/?P=CPET%202111) and CPET 2113 (http://catalog.pvamu.edu/search/?P=CPET%202113) and CPET 4391 (http://catalog.pvamu.edu/search/?P=CPET%204391) (may be taken concurrently).

CPET 4993 Independent Study: 1-3 semester hour.
Reading, research, and/or laboratory work on selected topics in Engineering Technology.