

# Electrical Engineering Technology - CPS (EET)

**EET 1990. Elective. 1-4 Hours.**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**EET 2000. Circuits 1. 3 Hours.**

Covers the design and analysis of practical DC circuits. Topics include basic concepts; resistors; capacitors; inductors; series and parallel circuits; theorems of Norton and Thevenin; Ohm's Law; Kirchhoff's laws; loop; nodal and mesh analysis; amplifiers; transient analysis of RL, RC, and RLC circuits; power and energy; transformers; power sources; relays; switches; and SPICE simulation.

**EET 2001. Lab for EET 2000. 2 Hours.**

Accompanies EET 2000. Covers topics from the course through various experiments.

**EET 2100. Circuits 2. 3 Hours.**

Covers the design and analysis of practical AC circuits. Topics include network theorems; phasors; equivalent circuits; sinusoidal sources; steady-state analysis; steady-state power; impedance; admittance and frequency response; resonance; Bode plots; filters; power transfer; average, reactive, and complex power; and SPICE simulation.

**EET 2101. Lab for EET 2100. 2 Hours.**

Accompanies EET 2100. Covers topics from the course through various experiments.

**EET 2990. Elective. 1-4 Hours.**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**EET 3100. Electronics 1. 3 Hours.**

Covers the theory and practical uses of active semiconductors. Topics include the operating characteristics of diodes, field-effect transistors, bipolar junction transistors, MOS transistors, and op amps; the analysis and design of single-stage amplifiers, diode circuits, and transistor circuits; rectifier circuits, clamping and clipping circuits, voltage multipliers, Zener regulators, temperature measuring, discrete amplifiers, feedback, basic op amp circuits, and switching circuits. SPICE is used to simulate circuits.

**EET 3101. Lab for EET 3100. 2 Hours.**

Accompanies EET 3100. Covers topics from the course through various experiments.

**EET 3200. Electronics 2. 3 Hours.**

Covers advanced analog devices and circuits and their uses. Topics include operational amplifiers, power transistors, timers, linear voltage regulators, switching regulators, sensors, advanced op amp circuits, active filters, oscillator circuitry, function generator, comparators, and timer circuitry. SPICE is used to simulate circuits, and data sheet analysis is included.

**EET 3201. Lab for EET 3200. 2 Hours.**

Accompanies EET 3200. Covers topics from the course through various experiments.

**EET 3300. Digital Logic. 3 Hours.**

Covers the design, analysis, and simulation of digital circuits. Topics include number systems, Boolean algebra, logic gates, combinational logic, circuit simplification, multiplexers, demultiplexers, encoders, decoders, latches, flip-flops, registers, counters, synchronous sequential circuits, and read-only (ROM) and random-access memory (RAM). Includes digital logic circuitry based on RTL, TTL, ECL, and CMOS logic families and the simulation of digital circuits using a hardware description language.

**EET 3301. Lab for EET 3300. 2 Hours.**

Accompanies EET 3300. Covers topics from the course through various experiments.

**EET 3400. Digital Electronics. 3 Hours.**

Covers concepts needed to implement digital circuits. Topics include digital logic circuitry based on RTL, TTL, ECL, and CMOS logic families; semiconductor, magnetic, and optical memory; read-only memory (ROM); random-access memory (RAM); programmable logic arrays (PLAs); programmable logic; the simulation of digital circuits using a hardware description language; and tools for electronic design automation.

**EET 3401. Lab for EET 3400. 2 Hours.**

Accompanies EET 3400. Covers topics from the course through various experiments.

**EET 3750. Linear Systems. 3 Hours.**

Covers the basic theory of continuous and discrete systems, emphasizing linear time-invariant systems. Considers the representation of signals and systems in both the time and frequency domain. Topics include linearity, time invariance, causality, stability, convolution, system interconnection, sinusoidal response, and the Fourier and Laplace transforms for the discussion of frequency-domain applications. Analyzes sampling and quantization of continuous waveforms (A/D and D/A conversion), leading to the discussion of discrete-time FIR and IIR systems, recursive analysis, and realization. The Z-transform and the discrete-time Fourier transform are developed and applied to the analysis of discrete-time signals and systems.

**EET 3800. Control Systems. 3 Hours.**

Covers the analysis of feedback control systems under both transient and steady-state conditions. Topics include the application of Laplace transforms in the formulation of block diagrams and transfer functions in control systems modeling; the performance characteristics of feedback control systems; and the analysis of the stability of feedback control systems using Routh-Hurwitz criterion. Uses frequency plots and measurement techniques to evaluate steady-state responses.

**EET 3990. Elective. 1-4 Hours.**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**EET 4100. Power Systems. 3 Hours.**

Presents the theory of electrical power generation and distribution. Covers single and multiphase systems, various electrical configurations (delta, wye), and sequence networks. Examines the electrical power system—from the power generation plant, to the high-voltage transmission lines, to the street-level transmission, to the power delivered to businesses and homes, and, finally, to power supplied to the load.

**EET 4110. Electromagnetics. 3 Hours.**

Covers the principles and applications of electromagnetics. Topics include electrostatics; magnetostatics; time-varying fields; Maxwell's equations; Poynting theorem; transmission lines; and the propagation, reflection, and refraction of plane waves, with applications to wave guides, resonators, optical fibers, and radiation and elementary antennas.

**EET 4120. Digital Signal Processing. 3 Hours.**

Covers the theory and practice of digital signal processing. Topics include the characteristics of discrete signals and systems; fundamental principles of convolution, linearity, and duality; sampling theory; transform methods, including the Z, Fourier, and discrete Fourier transforms; digital filter design; quantization effects in digital signal processing; and computational techniques such as the fast Fourier transform algorithm.

**EET 4130. Electrical Machines. 3 Hours.**

Covers the design and analysis of electric machines, including magnetic circuits, transformers, DC machines, AC machines, synchronous machines, induction machines, stepper motors, generators, controllers, alternators, and direct-current machines. Topics include efficiency, energy conservation, power factor, magnetism, electromagnetic force, phasor diagrams, three-phase circuits, and rotating magnetic fields.

**EET 4140. Communication Systems. 3 Hours.**

Covers the fundamentals of digital communication systems. Topics include sampling, aliasing, interpolation, noise, digital communication systems, transmitters, receivers, multiplexing and demultiplexing, pulse amplitude modulation, pulse frequency modulation, pulse code modulation, pulse width modulation, and analog-to-digital and digital-to-analog converters. Surveys characteristics of internet, microwave, satellite, optical, cell phone, and wireless communication systems.

**EET 4950. Seminar. 1-4 Hours.**

Offers an in-depth study of selected topics.

**EET 4955. Project. 1-4 Hours.**

Focuses on in-depth project in which a student conducts research or produces a product related to the student's major field. May be repeated without limit.

**EET 4983. Topics. 1-4 Hours.**

Covers special topics in electrical engineering technology. May be repeated without limit.

**EET 4990. Elective. 1-4 Hours.**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**EET 4991. Research. 1-4 Hours.**

Offers students an opportunity to conduct research under faculty supervision.

**EET 4992. Directed Study. 1-4 Hours.**

Offers independent work under the direction of members of the department on a chosen topic.

**EET 4993. Independent Study. 1-4 Hours.**

Offers independent work under the direction of members of the department on a chosen topic.

**EET 4994. Internship. 1-4 Hours.**

Provides students with an opportunity for internship work.

**EET 4995. Practicum. 1-4 Hours.**

Provides eligible students with an opportunity for practical experience.

**EET 4996. Experiential Education Directed Study. 1-4 Hours.**

Draws upon the student's approved experiential activity and integrates it with study in the academic major.