Electrical Engineering Tech (ELET)

Courses

**ELET 1011 Intro Engr Cs Tech: 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: ELET 1021.

**ELET 1021 Intro ELET 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: ELET 1011.

**ELET 1121 DC/AC Circuits Laboratory: 1 semester hour.**
The Applications of Ohm's Law, Kirchhoff's Law, and related theories to the principle of DC and magnetism in conductors and insulators. Prerequisite: credit for or concurrent enrollment in AC circuits, impedance and phasor experiments.
Prerequisites: MATH 1113 or MATH 1115.
Co-requisite: ELET 1123.

**ELET 1123 DC/AC Circuits: 3 semester hours.**
Basic principles of electricity, magnetism, conductors, insulators, electric theory, Ohm's Law, Kirchhoff's Laws, characteristics. Study of DC and AC circuits, series and parallel DC circuits, and basic instruments used in electronics.
Prerequisites: MATH 1115.
Co-requisite: ELET 1121.

**ELET 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 Electrical Engineering Technology. The work assignment must be commensurate with the student's major. A subsequent written report is required.

**ELET 2221 Basic Electronics I Laboratory: 1 semester hour.**
The implementation of semiconductors in electronic circuits and the analysis of basic amplifiers.
Prerequisites: (MATH 1113 or MATH 1115) and ELET 1121 and ELET 1123 and ELET 2223 (may be taken concurrently).

**ELET 2223 Basic Electronics I: 3 semester hours.**
Principles of elementary electronics circuit design and analysis. Solid state diodes, bipolar and MOSFET transistors, biasing techniques DC and AC load lines. Analysis of basic amplifiers.
Prerequisites: (MATH 1113 or MATH 1115) and ELET 1121 and ELET 1123 and ELET 2221 (may be taken concurrently).

**ELET 2341 Circuits Analysis Laboratory: 1 semester hour.**
Laboratory experiments in circuit analysis, controlled sources, transient and sinusoidal solutions.
Prerequisites: ELET 1121 and ELET 1123 and MATH 1124.
Co-requisite: ELET 2343.

**ELET 2343 Circuit Analysis: 3 semester hours.**
Study of circuit analysis techniques, transient and sinusoidal responses. Applications of transform methods for circuit analysis.
Prerequisites: ELET 1121 and ELET 1123 and MATH 1124.
Co-requisite: ELET 2341.

**ELET 3003 Antennas and Transmission Systems: 3 semester hours.**
Topics that will be covered are VSWR, application of Smith charts, characteristic of antennas, characteristic of transmission lines, fiber optics used in data transmission, characteristic impedance of transmission lines, antenna gain calculations, antenna patterns, antenna grounding, microwave antenna considerations, and field strength measurement.
Prerequisites: MATH 2024 and ELET 2221 and ELET 2223.

**ELET 3023 Computer Applications to Electrical Problems: 3 semester hours.**
The development of orderly methods of solving current voltage relations problems, circuit law problems, and electronics problems with the use of the computer.
Prerequisites: CPET 1023.

**ELET 3151 Electronics II Laboratory: 1 semester hour.**
Implementation and measures on field effect transistors as amplifiers, filters, oscillators and voltage regulators.
Prerequisites: ELET 2221 and ELET 2223 and PHYS 2123 and ELET 3153 (may be taken concurrently).

**ELET 3153 Electronics II: 3 semester hours.**
Theory, operation and applications of different types of field effect transistors. Active filters, oscillators, and transient solutions, regulators.
Prerequisites: ELET 2221 and ELET 2223 and PHYS 2123 and ELET 3151 (may be taken concurrently).


**ELET 3333 Electrical Engineering Technology Cooperative Education: 3 semester hours.**
A cooperative arrangement between the university and a company or government agency that provides experiences for students majoring in Electrical Engineering Technology. The work assignment must be commensurate with the student's major. A subsequent report is required.

**ELET 3451 Robotics I Laboratory: 1 semester hour.**
Experiments with and testing of robotic devices, including sensors, motion systems, electronics components, and control.
Prerequisites: ELET 2221 and ELET 2223 and ELET 3453 (may be taken concurrently).

**ELET 3453 Robotics I: 3 semester hours.**
Applications of robotic devices, including sensors, motion systems, electronics components, and control systems. Basic programming of robots.
Prerequisites: ELET 2221 and ELET 2223 and ELET 3451 (may be taken concurrently).

**ELET 3521 Instrumentation, Robotics and Controls Lab: 1 semester hour.**
The theory and applications of electrical application of electronic measuring instruments and input/output transducers. Topics include analog and digital instruments and transducers. Theory and applications of robotic devices and control systems.
Prerequisites: ELET 2221 and ELET 2223 and PHYS 2123 and ELET 3523 (may be taken concurrently).

**ELET 3523 Instrumentation, Robotics and Controls: 3 semester hours.**
The theory and applications of electrical application of electronic measuring instruments and input/output transducers. Topics include analog and digital instruments and transducers. Theory and applications of robotic devices and control systems.
Prerequisites: ELET 2221 and ELET 2223 and PHYS 2123 and ELET 3521 (may be taken concurrently).

**ELET 3603 Digital Integrated Circuits Devices and Applications: 3 semester hours.**
A treatise of LSI and VLSI devices to include memories, interfacing, data transfer, and arithmetic logic units. The application and programming of Motorola's 68000 and Intel's 80286 microprocessors will be covered.

**ELET 3701 Communication Circuits I Laboratory: 1 semester hour.**
Laboratory experiments in the areas of RF circuits including impedance matching, RF power amplifiers, wideband amplifiers, RF oscillators, and phase shift oscillators.
Prerequisites: ELET 2221 and ELET 2223 and ELET 3703 (may be taken concurrently).

**ELET 3703 Communication Circuits I: 3 semester hours.**
RF circuits including impedance matching, RF power amplifiers, wideband amplifiers RF oscillators, phase shift oscillators, AM, FM, and PM circuits.
Prerequisites: ELET 2221 and ELET 2223 and ELET 3701 (may be taken concurrently).

**ELET 3911 Mixed Signals I Lab: 1 semester hour.**
Familiarization of mixed signal test equipment and software. Remote controlled equipment using Lab VIEW. Testing of analog and mixed signal devices such as diodes, transistors, op-amps, and comparators.
Prerequisites: ELET 2221 and ELET 2223 and ELET 3913 (may be taken concurrently).

**ELET 3913 Mixed Signals I: 3 semester hours.**
Overview of mixed signal testing. Test specification process, tester hardware, DC and parametric measurements, measurement accuracy, and sampling theory.
Prerequisites: ELET 2221 and ELET 2223 and ELET 3911 (may be taken concurrently).

**ELET 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.

**ELET 4092 Senior Project II: 2 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. Oral presentations throughout the semester culminating in a final written report.
Prerequisites: ELET 4082.

**ELET 4101 Special Topics Lab: 1 semester hour.**
Laboratory experiments in selected current and emerging topics in Electrical Engineering Technology.

**ELET 4102 Special Topics: 2 semester hours.**
Selected current and emerging topics in Electrical Engineering Technology.

**ELET 4103 Special Topics: 3 semester hours.**
Selected current and emerging topics in Electrical Engineering Technology.

**ELET 4241 Operational Amplifier Theory and Applications Laboratory: 1 semester hour.**
The application of designing and evaluating differential and operational amplifier circuitry, feedback configurations, linear and nonlinear circuitry.
Prerequisites: ELET 2221 (may be taken concurrently) and ELET 2223 (may be taken concurrently) and MATH 2024 (may be taken concurrently) and ELET 4243 (may be taken concurrently).
ELET 4243 Operational Amplifier Theory and Applications: 3 semester hours.
The design and evaluation of differential and operational amplifier circuitry, feedback configurations, operational amplifiers, errors compensation, linear and nonlinear circuitry.
Prerequisites: ELET 2221 (may be taken concurrently) and ELET 2223 (may be taken concurrently) and MATH 2024 (may be taken concurrently) and ELET 4241 (may be taken concurrently).

ELET 4471 Control Systems Laboratory: 1 semester hour.
The laboratory testing of automated controlled circuitry designed and developed with electrical engineering techniques. Automated controlled circuits designed with digital filter circuits will be tested.
Prerequisites: ELET 2341 and ELET 2343 and ELET 4473 (may be taken concurrently).

ELET 4473 Control Systems: 3 semester hours.
The application of control and automated systems to computers. The analysis and design of transducers and signal converters for process control. The development of electrical circuitry to be used in computer programming.
Prerequisites: ELET 2341 and ELET 2343 and ELET 4471 (may be taken concurrently).

ELET 4513 Advanced Integrated Circuits: 3 semester hours.
Fabrication of LSI and VLSI devices. Design considerations of PROM, EPROM, EEPROM devices and LIFO, FIFO memories. Students will be required to write computer programs that will perform typical dynamic testing of integrated circuits.
Prerequisites: ELET 2221 and ELET 2223.

ELET 4621 Mixed Signals II Lab: 1 semester hour.
Testing of ADC and DAC. Gain and offset measurements, DC and linearity testing, FFT and its effect of aliasing. ATE projects.
Prerequisites: ELET 3911 and ELET 3913.
Co-requisite: ELET 4623.

ELET 4623 Mixed Signals II: 3 semester hours.
Sampling theory, DSP based mixed signal testing, analog channel measurements, DAC/ADC testing, focused calibrations, DIB design, data analysis and test economics.
Prerequisites: ELET 3911 and ELET 3913.
Co-requisite: ELET 4621.

ELET 4801 Communications Circuits II Laboratory: 1 semester hour.
Laboratory experiments in the areas of analog and digital data communication techniques.
Prerequisites: ELET 2221 and ELET 2223 and ELET 4803 (may be taken concurrently).

ELET 4803 Communication Circuits II: 3 semester hours.
Analog and Digital Data communications techniques including PPM, PWM, FSK, DM, PAM, and PCM. Data Modem, digital coding/decoding, Interfacing and Codec circuits.
Prerequisites: ELET 2221 and ELET 2223 and ELET 4801 (may be taken concurrently).

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