

# Electrical Engineering Tech (ELET)

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## Courses

### ***ELET 1112 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 1314 or MATH 1113 or MATH 1115 or MATH 1511.

### ***ELET 1312 DC/AC Circuits: 0 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 1511 or MATH 1115.

### ***ELET 2122 Basic Electronics I Laboratory: 1 semester hour.***

The implementation of semiconductors in electronic circuits and the analysis of basic amplifiers.

Prerequisites: (MATH 1314 or MATH 1113 or MATH 1511 or MATH 1115) and (ELET 1112 or ELET 1121) and (ELET 1312 or ELET 1123) and (ELET 2322 or ELET 2223).

### ***ELET 2134 Circuits Analysis Laboratory: 1 semester hour.***

Laboratory experiments in circuit analysis, controlled sources, transient and sinusoidal solutions.

Prerequisites: ELET 1112 or ELET 1121 and (ELET 1312 or ELET 1123) and (MATH 2413 or MATH 1124).

### ***ELET 2322 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 1314 or MATH 1511 or MATH 1113 or MATH 1115) and (ELET 1112 or ELET 1121) and (ELET 1312 or ELET 1123) and ELET 2122 (may be taken concurrently).

### ***ELET 2334 Circuit Analysis: 3 semester hours.***

Study of circuit analysis techniques, transient and sinusoidal responses. Applications of transform methods for circuit analysis.

Prerequisites: ELET 1112 or ELET 1121 and (ELET 1312 or ELET 1123) and (MATH 2413 or MATH 1124).

### ***ELET 3115 Electronics II Laboratory: 1 semester hour.***

Implementation and measures on field effect transistors as amplifiers, filters, oscillators and voltage regulators.

Prerequisites: ELET 2122 or ELET 2221 and (ELET 2322 or ELET 2223) and (PHYS 1302 or PHYS 2123) and ELET 3315 (may be taken concurrently).

### ***ELET 3152 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 2122 or ELET 2221 and (ELET 2322 or ELET 2223) and (PHYS 1302 or PHYS 2123) and ELET 3352 (may be taken concurrently).

### ***ELET 3191 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 2122 and ELET 2322 and ELET 3391.

### ***ELET 3300 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 2414 or MATH 2024 and (ELET 2122 or ELET 2221) and (ELET 2322 or ELET 2223).

### ***ELET 3315 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 or ELET 2122 and (ELET 2322 or ELET 2223) and (PHYS 1302 or PHYS 2123) and ELET 3115 (may be taken concurrently).

### ***ELET 3352 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 2122 or ELET 2221 and (ELET 2322 or ELET 2223) and (PHYS 2123 or PHYS 1302) and ELET 3152 (may be taken concurrently).

### ***ELET 3391 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 2122 or ELET 2221 and ELET 2322 or ELET 2223 and ELET 3191 (may be taken concurrently).

***ELET 4162 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 3191 or ELET 3911 and (ELET 3391 or ELET 3913).

Co-requisite: ELET 4362.

***ELET 4208 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 4351 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 2122 or ELET 2221 and (ELET 2322 or ELET 2223).

***ELET 4362 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 3191 or ELET 3911 and (ELET 3391 or ELET 3913).

Co-requisite: ELET 4162.

***ELET 4399 Independent Study: 1-3 semester hour.***

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