

Electronics Engineering Technology (ELT)

Courses

ELT-100. Circuit Analysis DC/AC. 3 Credits.

LECT 30 hrs LAB 30 hrs

This course introduces the student to both DC and AC circuit theory. It includes Ohm's and Kirchoff's laws for analysis of series and parallel circuits. Computer circuit simulation of series-parallel, ladder and bridge networks in both DC and AC are analyzed. Resonance and frequency response are included along with some discussion of AC power and transformers. The laboratory experiments are designed to support the theory and obtain measurement skills.

Prerequisites: MAT-110/equivalent and ENR 119 and ENR-124 OR MAT-110/equivalent and ENR-132 OR MAT-123

Additional Fees: Course fee applies.

ELT-102. Circuit Measurement and Fundamentals. 1 Credit.

LAB 30 hrs

An introductory course in electrical circuit analysis and measurement. This course will cover topics in DC and AC circuits, as well as the instruments needed to properly characterize the behavior of these types of circuits. This course is required by the majors in the Electronics Engineering Technology and the Biomedical Equipment Options, and will serve as a supplement to material covered in the Circuit Analysis course.

Corequisites: ELT-100

Additional Fees: Course fee applies.

ELT-110. Digital Principles. 3 Credits.

LECT 30 hrs LAB 45 hrs

This course develops the fundamentals of the binary system. Circuit implementation from Boolean functions and map minimization. Course includes study of combinational logic, sequential logic circuits, flip-flops, counters and shift register. The laboratory allows the student to apply theory to practical digital circuits.

Additional Fees: Course fee applies.

ELT-115. Active Circuit Components. 3 Credits.

LECT 30 hrs LAB 60 hrs

This course introduces the behavior of semiconductor electronic devices and develops the device characteristics. Some DC and AC circuit theory is expanded upon so that the active devices can be properly analyzed. Biasing techniques and models of amplifier configurations are stressed for the bipolar transistor and field effect devices. Diodes, rectifiers, filtering and switching circuit applications are studied. Laboratory includes the verification of device characteristics and the testing of basic amplifier and switching configurations.

Prerequisites: ELT-201 OR ELT-100 AND ELT-102

Additional Fees: Course fee applies.

ELT-121. Circuit Analysis. 4 Credits.

LECT 45 hrs LAB 45 hrs

This course introduces the student to both DC and AC circuit theory. It includes Ohm's and Kirchoff's laws for analysis of series and parallel circuits. Computer circuit simulation of series-parallel, ladder and bridge networks in both DC and AC are analyzed. Resonance and frequency response are included along with some discussion of AC power and transformers. The laboratory experiments are designed to support the theory and obtain measurement skills.

Prerequisites: MAT-110 and ENR-124

Additional Fees: Course fee applies.

ELT-123. Studio Maintenance. 3 Credits.

LECT 30 hrs LAB 30 hrs

For Music Recording majors only. This course provides students an introduction to music studio electronics. Basic skills of working with electronic components are covered, including soldering, the use of electronic measuring equipment and troubleshooting procedures. Studio cabling and infrastructure are dealt with extensively. Various wiring schemes and grounding techniques are examined to give the student an understanding of the typical music studio layout found in the professional environment. This course is for Music Recording majors only and does not serve as a technical elective for the Electronics Engineering Technology major. This course is offered in the Fall semester.

Prerequisites: MUS-165

Additional Fees: Course fee applies.

ELT-200. Biomedical Electronics. 3 Credits.

LECT 45 hrs

This course is the study of the techniques and theory behind the instrumentation utilized in hospital and health-related laboratory work. Emphasis is placed on physiological signals derived from the body and the problems and safety issues associated with their measurement. Demonstrations are conducted in class.

Prerequisites: ELT-115 and ELT-201.

ELT-201. Electricity and Electronics. 4 Credits.

LECT 45 hrs LAB 45 hrs

This course is a fundamental study of electricity and electronics for Engineering Technology majors. The principles of electrical components and circuits are studied in class and laboratory. Topics include DC, AC series and parallel circuits, transformers and power supplies, solid state amplifiers and control components. The laboratory enables the student to apply the theory discussed in class and to gain some proficiency in the use of electronic measuring equipment.

Prerequisites: MAT-110 or equivalent and ENR-124

Additional Fees: Course fee applies.

ELT-209. Advanced Digital and Microprocessors. 4 Credits.

LECT 45 hrs LAB 45 hrs

This course is an extension of digital theory into the operation and interfacing of microprocessors. Major topics include sequential logic design, memory organization, microprocessor architecture, machine level programming, A/D and D/A conversion, and serial and parallel interfacing. An associated laboratory provides for hands-on microprocessor interfacing and the use of logic analyzers.

Prerequisites: ELT-110 and ENR-120 or CMP-128

Additional Fees: Course fee applies.

ELT-210. Electronic Fabrication. 1 Credit.

LAB 45 hrs

This course provides students with an opportunity to learn about the process involved in the fabrication of electronic circuit boards. Using computer-aided drafting tools, students create an electronic component layout and necessary art work for the construction of a printed circuit board. Students are introduced to project management concepts and techniques, soldering, test specifications and printed circuit board construction. A term project or a series of smaller projects enables students to manage, build and assemble a printed circuit board and develop test specifications.

Prerequisites: ENR-117**Additional Fees:** Course fee applies.**ELT-213. Active Circuit Design. 4 Credits.**

LECT 45 hrs LAB 45 hrs

This course covers analysis and design of solid-state amplifiers using bipolar and field effect transistors. Topics include frequency response using Bode plots and feedback analysis as applied to operational amplifiers and oscillators. Laboratory verification includes transistors, amplifiers, power amplifiers, IC operational amplifiers and oscillators.

Prerequisites: ELT-115**Additional Fees:** Course fee applies.**ELT-215. Industrial Electronics. 4 Credits.**

LECT 45 hrs LAB 45 hrs

This course covers operational amplifiers in linear, non-linear and active filter applications, pulse and wave-shaping techniques, power supplies and regulators, thyristor control of power and transducers. The laboratory includes experiments in design and tests to support the above topics.

Prerequisites: ELT-209 and ELT-115**Additional Fees:** Course fee applies.**ELT-227. Biomedical Clinical Experience. 3 Credits.**

LECT 45 hrs

This course provides the student with a 200-hour internship at a local hospital. The student assists in the maintenance and calibration of biomedical electronic equipment. The student must abide by any rules and regulations stipulated in the affiliation agreement with the partnering hospital. As a minimum, the student is required to purchase liability insurance and agree to a criminal background check.

Prerequisites: ELT-200 and permission of department chair**Additional Fees:** Course fee applies.**ELT-230. Optoelectronics. 3 Credits.**

LECT 30 hrs LAB 45 hrs

This course covers principles of light and linear optics characteristics of electro-optical light sources and detectors and their applications in industry, displays and communication (fiber optics). Lab experiments demonstrate electro-optical measurements and designs of typical applications of electro-optical devices.

Prerequisites: MAT-110**Additional Fees:** Course fee applies.**ELT-231. Electronic Communication Systems. 4 Credits.**

LECT 45 hrs LAB 45 hrs

This course covers A.M., F.M., and single side-band communication systems, including an introduction to digital transmission. Designed to familiarize the student with transmitters, receivers, modems, noise analysis, information theory, pulse modulation, sampling, coding, multiplexing and other signal processing techniques used in commercial broadcasting and data transmission systems. The course includes some coverage of transmission lines, antennas, microwaves and satellites. Includes laboratory work involving communication system components and techniques using industrial grade equipment.

Prerequisites: ELT-201 OR ELT-100 AND ELT-102**Additional Fees:** Course fee applies.**ELT-239. Cooperative Work Experience Electronics Engineering Technology. 3 Credits.**

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This course provides a field experience in the laboratory facilities of an industrial firm. The course is designed for students in the Electronics Engineering Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Students must have completed 35 credits to enroll.

Prerequisites: Permission of department chair.**ELT-250. Solar Photovoltaic and Alternative Energy Systems. 3 Credits.**

LECT 30 hrs LAB 30 hrs

Examines the scientific principles, engineering design and implementation of solar photovoltaic (PV) systems. Students will learn about site assessment, specifying and evaluating hardware components, and modeling the economic performance for a solar PV system. In addition to solar, other alternative energy solutions will be studied as well. The course has been designed to meet the standards established by the North American Board of Certified Energy Practitioners (NABCEP) for their associate level certification. This course can be applied as an elective in the engineering technology degree programs or in the certificate programs.

Prerequisites: ELT-100**Additional Fees:** Course fee applies.**ELT-291. Special Topics in Electronics Engineering Technology. 3 Credits.**

LECT 30 hrs LAB 45 hrs

This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.

Prerequisites: Permission of department chair.**ELT-292. Special Topics in Electronic Engineering Technology. 3 Credits.**

LECT 30 hrs LAB 45 hrs

This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.

Prerequisites: Permission of department chair.