ELET: ELECTRONICS ENGINEERING (ELET)

ELET 101. Circuit Analysis I. (3 Credits)
A beginning course in electric circuit analysis with emphasis on direct-current applications. Topics include: SI units and scientific notation, electrical quantities, measuring electrical quantities, power and energy, resistive circuits, methods of analysis, network theorems and capacitance. Corequisites: ENGT 100 Introduction to Engineering Technology; MATH 150 Precalculus or equivalent; ELET 103 Circuit Analysis I Lab.

ELET 102. Circuit Analysis II. (3 Credits)
A beginning course in electric circuit analysis with emphasis on alternating-current applications. Topics include: magnetic circuits, inductors, sinusoidal waveforms, basic elements and phasors, series and parallel ac circuits, series-parallel networks, ac power, resonance, and three-phase systems. Prerequisites: ELET 101 Circuit Analysis I; MATH 150 Precalculus or equivalent Corequisite: ELET 104 Circuit Analysis II Lab.

ELET 103. Circuit Analysis I Lab. (1 Credit)
Laboratory experiments in DC theory with emphasis on breadboarding electric circuits, using meters, and using electronic simulation software to complement ELET 101 Circuit Analysis I. Corequisites: ENGT 100 Introduction to Engineering Technology; Math 150 Precalculus or equivalent; ELET 101 Circuit Analysis I.

ELET 104. Circuit Analysis II Lab. (1 Credit)
Laboratory experiments in AC theory with emphasis on breadboarding electric circuits, using meters and other test equipment to measure and troubleshoot AC circuits and devices. Develops skills in measuring AC circuit parameters. Prerequisites: ELET 101 Circuit Analysis I; MATH 150 Precalculus or equivalent Corequisite: ELET 102 Circuit Analysis II.

ELET 203. Intro to Electronics. (3 Credits)
An introductory course in solid-state electronic devices and their applications. Topics include the following: diodes and their applications, Zener diodes, the junction transistor, CE, CB, and CC configurations of junction transistors, the SCR and other thyristors, and field-effect transistors. Prerequisite: ELET 101 Circuit Analysis I Corequisite: ELET 205 Introduction to Electronics Lab.

ELET 204. Electronic Circuits. (3 Credits)
An introductory course in solid-state electronic circuits and their applications. Topics include the following: amplifier frequency response, power amplifiers, oscillators, differential and operational amplifiers, operational amplifier applications, power supplies, and voltage regulators. Prerequisite: ELET 203 Introduction to Electronics Corequisite: ELET 206 Electronics Circuits Lab.

ELET 205. Introd to Electronics Lab. (1 Credit)
Laboratory experiments with semiconductor junction devices, with emphasis on diodes, bipolar junction transistors and field-effect transistors including DC biasing and stability to complement ELET 203 Introduction to Electronics. Prerequisite: ELET 101 Circuit Analysis I Corequisite: ELET 203 Introduction to Electronics.

ELET 206. Electronics Circuits Lab. (1 Credit)
Laboratory experiments on power amplifiers, operational amplifiers, oscillators, voltage regulators, and other semiconductor devices, and frequency response analysis to complement ELET 204 Electronic Circuits. Prerequisite: ELET 203 Introduction to Electronics; Corequisite: ELET 206 Electronic Circuits.

ELET 207. Digital Circuits. (3 Credits)
An introductory course in digital-circuit concepts, applications, and design. Topics include the following: number systems and codes, logic gates, Boolean algebra, Karnaugh mapping, combinational logic design, sequential logic circuits, sequential logic design, and IC logic families. Prerequisite: ELET 101 Circuit Analysis I Corequisite: ELET 209 Digital Circuits Lab.

ELET 208. Microprocessors. (3 Credits)
Introduction to 16-bit microprocessors with emphasis on programming. Topics include the following: data control, memories, data transmission, addressing modes, subroutines, and introduction to hardware. Prerequisite: ELET 207 Digital Circuits Corequisite: ELET 211 Microprocessors Lab.

ELET 209. Digital Circuits Lab. (1 Credit)
Laboratory experiments in combinational logic circuits designed to complement ELET 207 Digital Circuits; analyze, measure and troubleshoot logic circuits and devices using general test equipment. Prerequisite: ELET 101 Circuit Analysis I Corequisite: ELET 207 Digital Circuits.

ELET 211. Microprocessors Lab. (1 Credit)
Microprocessor-based laboratory utilizing computer programming language. Emphasis is on writing and running programs on 8086/8088 based microprocessor systems. Laboratory experience includes both software and hardware. This is the laboratory that accompanies ELET 208 Microprocessors. Prerequisite: ELET 207 Digital Circuits Corequisite: ELET 208 Microproces.

ELET 304. Advanced Circuit Analysis. (1-4 Credits)
An advanced course in electric circuit analysis. Topics include the following: review of analysis methods for dc and ac networks, waveforms, differential equations, Laplace transforms and applications, and transfer functions. Prerequisites: ELET 102 Electronic Circuits; MATH 260 Calculus I.

ELET 306. Advanced Electronics. (3 Credits)
An advanced course in the design and applications of linear integrated circuit devices. Topics include the following: power supply regulators, op-amp characteristics, single-supply operation, signal generator circuits, and active filters. Prerequisites: ELET 204 Electronic Circuits; MATH 260 Calculus I Corequisite: ELET 307 Advanced Electronics Lab.

ELET 307. Advanced Electronics Lab. (1 Credit)
Hands-on experience with the design and applications of more advanced electronic circuits including linear integrated electronic circuit devices. This laboratory course is designed to complement ELET 306 Advanced Electronics. Prerequisites: ELET 204 Electronic Circuits; MATH 260 Calculus I Corequisite: ELET 306 Advanced Electronics.

ELET 309. Advanced Digital Circuit. (3 Credits)
A design course for digital computer circuits using integrated circuit devices. Topics include the following: shift registers, counters, encoders, multiplexers, arithmetic circuits, D/A and A/D converters, and memory circuits. Prerequisite: ELET 207 Digital Circuits Corequisite: ELET 311 Advanced Digital Circuits Lab.

ELET 311. Adv Digital Circuits Lab. (1 Credit)
This laboratory course complements ELET 309 Advanced Digital Circuits. Students design, construct and troubleshoot digital circuits that include shift registers, memory ICs, PLDs, DACs/ADCs.Design and simulation tools are utilized. Prerequisite: ELET 207 Digital Circuits Corequisite: ELET 309 Advanced Digital Circuits.

ELET 399. Special Topics. (3 Credits)
A course which can be designated by the department to cover some aspect of Engineering Technology as needed by a class or group of students in lieu of another technical elective or as independent study to upgrade their skills and knowledge in a particular area. Prerequisite: Permission of the instructor.

ELET 401. Electric Machinery. (3 Credits)
A course in electric machines designed for students majoring in electronics engineering technology. Topics include the following: fundamentals of electromagnetics, dynamo construction, dc generators and motors, ac dynamos, synchronous machines, ideal and practical transformers, polyphase and single-phase induction motors, and other single-phase motors. Prerequisites: ELET 102 Circuit Analysis II; MATH 260 Calculus I; PHYS 106 Introduction to Physics II or equivalent.

ELET 403. Control Systems. (3 Credits)
A course in control theory and applications. Topics include the following: feedback control, servo components, mathematical techniques, transfer functions, block diagrams, analysis of second-order servo systems, stability and frequency response analysis, and compensation. Prerequisites: ELET 304 Advanced Circuit Analysis; MATH 261 Calculus II; PHYS 105 Introduction to Physics I or equivalent.

ELET 406. Communication Systems. (3 Credits)
Introduction to the theory and practice of communication systems. Covers communication system theory, analog and digital communication techniques. Topics include the following: amplitude, phase, analog, pulse and digital modulation, design and analysis of modulation systems. Prerequisites: ELET 208, ELET 306, ELET 309 and PHYS 106 (or equivalent)

ELET 408. Advanced Microprocessors I. (3 Credits)
An advanced course in microprocessors with emphasis on the hardware of a 16-bit processor. Topics include the following: introduction to the 8086/8088 microprocessor, arithmetic and logic instructions, program control instructions, 8086/8088 hardware specifications, memory interfacing, input/output interfacing, and interrupt circuits. Prerequisite: ELET 208 MICROPROCESSORS Corequisite: ELET 411 Advanced Microprocessors I Lab.

ELET 409. Advance Microprocessors II. (3 Credits)
An advanced course in microprocessors with emphasis on the hardware interfacing of the 8086/8088 to compatible chips. Topics include the following: basic I/O interfacing (using the 8255A PPI), interrupts (using the 8259A PIC), direct memory access, the 8089 I/O coprocessor, the 8087 arithmetic coprocessor, and other 8086/8088 family members. Prerequisite: ELET 408 Advanced Microprocessors I Corequisite: ELET 412 Advanced Microprocessors II Lab.

ELET 412. Advan Microprocessors II Lab. (1 Credit)
Project oriented laboratory course in the areas of microprocessor based systems. Prerequisite: ELET 408 Advanced Microprocessors I Corequisite: ELET 409 Advanced Microprocessors II.

ELET 415. Power System Fundamentals. (3 Credits)
This course offers an overview of power system fundamentals with an emphasis on industry-relevant material. Topics include: an introduction to electrical power systems, circuit solving, components of a power system, and power system analysis. Prerequisite (s): ELET 102 Circuit Analysis II or ENGT 290 Introduction to Electricity and Electronics or equivalent.

ELET 499. Special Topics. (3 Credits)
A course which can be designated by the department to cover some aspect of Engineering Technology as needed by a class or group of students in lieu of another technical elective or as independent study to upgrade their skills and knowledge in a particular subject area. Prerequisite: Permission of instructor.