ELECTRICAL ENGINEERING TECHNOLOGY

The electrical engineering technology (EET) curriculum provides preparation for outstanding career opportunities not only in the electrical and electronics industries, but also in many other sectors because of their dependence upon electricity and electronics control, power, communications, and computation. The job responsibility of electrical engineering technology graduates ranges from application engineer, testing engineer, and field engineer. In addition, the graduates also work as design and development engineer and application development engineer for modern microprocessors.

The EET program offers a Bachelor of Science in Engineering Technology degree with a major in Electrical Engineering Technology. An option with an emphasis on computers and computing is also available. The program focuses on a hands-on laboratory-oriented curriculum to meet the diverse needs of modern industries. It provides a strong foundation of specialized mathematics, science, applied electrical engineering, and related technical courses, as well as courses in the area of written and oral communications, humanities, and the social sciences.

Program Educational Objectives

OSU Electrical Engineering Technology graduates a few years after graduation will:

- Show continuous career improvement, evidenced by assumption of greater responsibility or leadership, promotion, participation in continuing education or graduate studies, or transition into other technical or professional careers.
- Be able to work independently as well as collaboratively with others while demonstrating the professional and ethical responsibilities of the engineering profession.

Electrical Engineering Technology graduates can expect to obtain these student outcomes upon graduation:

Program Outcomes

(1) An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline;

(2) An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline;

(3) An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

(4) An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

(5) An ability to function effectively as a member as well as a leader on technical teams.

The *Electrical Engineering Technology major* provides graduates the ability to enter into many dynamic fields of electrical engineering and electrical technology. The demand for graduates having electronic and electrical engineering design and application skills continues to grow. Graduates of this program are prepared for a wide range of opportunities for employment in an industry that requires considerable knowledge of the electrical engineering and technology professions.

The *Electrical Engineering Technology–Computer option* curriculum provides the preparation for graduates to enter the growing field of computer hardware and software engineering. The demand for graduates having both computer hardware and software skills is high as the intensity of automation, robotics, and artificial intelligence is growing.

The Electrical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/).

Courses

EET 1003 Introduction to Microcomputer Programming
Prerequisites: Consent of instructor.
Description: Programming a microcomputer using a spreadsheet and in BASIC. Application of algorithms to solve defined problems and an introduction to the numerical limitations of small machines. Previously offered as ECT 1003.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 1101 Fundamentals of DC Circuits Lab
Prerequisites: Consent of instructor.
Description: Elementary principles of dc electricity laboratory for Non-EET students who have taken a dc circuits course without a lab component. This is the same curriculum and lab experience that students would experience taking EET 1114. May not be used for degree credit with EET 1134 or EET 1104.
Credit hours: 1
Contact hours: Lab: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lab
Department/School: Engineering Technology

EET 1104 Fundamentals of Electricity
Prerequisites: Concurrent enrollment in MATH 2123 or MATH 2144 or Consent of Instructor.
Description: Elementary principles of electricity covering basic electric units. Ohm's law, Kirchoff's law, circuit solutions, network solutions, magnetism, inductance and capacitance. Previously offered as ECT 1104. May not be used for degree credit with EET 1134 or EET 1101.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 1134 Fundamentals of DC Circuits
Prerequisites: Concurrent enrollment in MATH 2123 or MATH 2144 or consent of instructor.
Description: Elementary principles of dc electricity laboratory for Non-EET students covering basic electrical units, Ohm's Law, Kirchoff's Law, circuit solutions, network solutions, magnetism, inductance and capacitance. May be substituted for EET 1104 and grade of "B" or better and consent of the department. May not be used for degree credit with EET 1101.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 1201 Fundamentals of AC Circuits Lab
Prerequisites: "C" or better in EET 1104 OR "C" or better in EET 1134 or consent of instructor.
Description: Elementary principles of ac electricity laboratory for Non-EET students who have taken an ac circuits course without a lab component. This is the same curriculum and lab experience that students would experience taking EET 1214. May not be used for degree credit with EET 1214 or EET 1244.
Credit hours: 1
Contact hours: Lab: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lab
Department/School: Engineering Technology

EET 1214 Fundamentals of AC Circuits
Prerequisites: ("C" or better in EET 1104 OR "C" or better in EET 1134) AND ("C" or better in MATH 2123 OR "C" or better in MATH 2144) or consent of instructor.
Description: Elementary principles of ac electricity laboratory for Non-EET students covering basic electrical units, The use of network theorems and phasors, coupled circuits, resonance, filters and power will be studied. May be substituted for EET 1244 with grade of "B" or better and consent of the department. May not be used for degree credit with EET 1201.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 1244 Circuit Analysis I
Prerequisites: ("C" or better in EET 1104 OR "B" or better in EET 1134) AND ("C" or better in MATH 2123 OR "C" or better in MATH 2144) OR consent of instructor.
Description: Analysis of AC electric circuits. The use of network theorems and phasors, coupled circuits, resonance, filters, and power. Course previously offered as ECT 1244. May not be used for degree credit with EET 1214 or EET 1201.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 2303 Technical Programming
Prerequisites: Consent of instructor.
Description: Introduction to machine programming using industrial standard languages, emphasis on problems from science and technology. Course previously offered as ECT 2303.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 2544 Pulse and Digital Techniques
Prerequisites: "C" or better in EET 1104 or "B" or better in EET 1134 OR ("C" or better in ENSC 2613 and ENSC 2411A) OR equivalent. Prerequisites may be taken concurrently.
Description: Electronic circuits used in digital control and computation. Pulse generation, Boolean algebra and logic circuits. Course previously offered as ECT 2544.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 2 Contact: 5
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 2633 Solid State Devices and Circuits I
Prerequisites: ("C" or better in EET 1244 OR "B" or better in EET 1214 OR ("C" or better in both ENSC 2613 AND ENSC 2411)) AND ("C" or better in MATH 2123 OR MATH 2144).
Description: Diodes, Circuit protection, wave shaping, rectifiers, load switching, and power supplies. Transistors and Op amps and their applications. Course previously offered as ECT 2635 and EET 2635.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 2643 Solid State Devices and Circuits II
Prerequisites: EET 2633.
Description: A continuation of EET 2633. Transistors and their applications - amplifiers. Op-amp circuits, comparators, instrument amplifiers, and filters and their analysis.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 3005 Electronics Analysis I
Prerequisites: EET 1244 and EET 2544 and EET 2635.
Description: Extensive use of mathematics in analyzing discrete, linear device, linear systems and non-linear circuits. Development of the analytic skills necessary for upper-division work. The use of basic calculus in circuit analysis. Must obtain a "C" or better before admission to other 3000 level EET courses. Intended for transfer and returning students. Enrollment by adviser consent.
Credit hours: 5
Contact hours: Lecture: 5 Contact: 5
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3104 Elements of Electricity and Electronics
Prerequisites: MATH 1513.
Description: Essentials of electricity, controls, and electronics for non-majors. No credit for EET majors. Course previously offered as ECT 3104.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 3113 Circuit Analysis II
Prerequisites: (EET 1244 with a grade of "C" or better OR EET 1214 with a grade of "B" or better AND EET 2635 OR EET 2633 with a grade of "C" or better AND MATH 2133 with a grade of "C" or better OR MATH 2153 with a grade of "C" or better) or (ENSC 2613 and ENSC 2411 with "C" or better).
Description: Application of elementary switching functions and LaPlace transforms to electronic circuit analysis. Circuit analysis in the S-plane, transfer functions and the application of circuit analysis software. Course previously offered as ECT 3113.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3123 Project Design and Fabrication
Prerequisites: ("C" or better in EET 2544 AND ("C" or better in EET 2635 OR "C" or better in EET 2633)) OR ("C" or better in ENSC 2613 and ENSC 2411 AND (a "C" or better in EET 2635 OR EET 2633)) OR Instructor Approval.
Description: Methods of designing, analyzing and fabricating electronic circuits using standard software packages. Heat transfer characteristics and problem solutions are included. Course previously offered as ECT 3124 and EET 3124.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3253 Microprocessors I
Prerequisites: EET 2544.
Description: An introduction to microcontrollers and their uses in embedded applications. Topics include system architecture, assembly language, structured programming, memory systems, user I/O, timers, peripherals, etc. Course previously offered as ECT 3254 and EET 3254.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3263 Microprocessors II
Prerequisites: EET 2303 with a grade of "C" or better and ((EET 3254 or EET 3253) with a grade of "C" or better).
Description: A continuation of EET 3253. Programming and interfacing of microcontrollers in embedded application, including interrupts, EEPROM, serial programming, interfacing, power management, algorithms, stepper motor control. Course previously offered as ECT 3264 and EET 3264.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3303 Python Programming for Technology and Engineering
Prerequisites: MATH 2123 or MATH 2144 plus previous programming experience in any language.
Description: The Python programming language including syntax, collections, modules, object-oriented programming, functions, and graphical user interfaces with emphasis on applications in technology and engineering.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3354 Communication and Signal Processing
Prerequisites: "C" or better in (EET 2635 or EET 2643) and "C" or better in EET 3423.
Description: Bandpass signaling principles and circuits. The Fourier transform; AM, SSB, FM, and PM signaling; binary modulated bandpass signaling (FSK and PSK); superheterodyne receiver; phase locked loop (PLL); modulators and mixers; frequency multiplication; special purpose IC's. Course previously offered as ECT 3354.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 3363 Data Acquisition
Prerequisites: "C" or better in EET 2544 AND "C" or better in EET 2635 OR EET 2633.
Description: Methods used to convert physical variables to digital signals and vice versa. Signal conditioning, digital-to-analog converters, analog-to-digital converters, sample-and-hold circuits, sensors, and transducers. The use of computers in data acquisition and signal processing. Course previously offered as ECT 3363.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 3423 Applied Analysis for Technology
Prerequisites: MATH 2133 with a grade of "C" or better OR MATH 2153 with a grade of "C" or better.
Description: Applications of elements of matrix algebra, ordinary differential equations, Fourier series, and infinite series to problems in engineering technology. Previously offered as GENT 3123.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3523 Advanced Logic Circuits
Prerequisites: EET 2544 with a grade of "C" or better.
Description: Computer-based design, simulation and implementation of digital/mixed-signal systems using programmable logic, field programmable gate arrays, ASICs and system-on-chip technology. Previously offered as EET 3524.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3533 Introduction to Telecommunications
Prerequisites: "C" or better in EET 2544 AND "C" or better in EET 2635 OR EET 2633.
Description: Introductory course to the field of telecommunications. Study of the various technologies and how the application of these technologies work together to form functioning systems and networks.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 3713 Introduction to Electric Power Technology I
Prerequisites: ("C" or better in EET 1244 OR "B" or better in EET 1214 AND ("C" or better in MATH 2133)) OR ("C" or better in ENSC 2613 AND ENSC 2411).
Description: Physical principles of electromagnetic and electromechanical energy conversion devices and their application to conventional transformers and rotating machines.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3723 Introduction to Electric Power Technology II
Prerequisites: "C" or better in EET 3713.
Description: Physical principles of electromagnetic and electromechanical energy conversion devices and their application to conventional transformers and rotating machines.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 3803 Fundamentals of Mechatronics
Prerequisites: Grade of "C" or better in EET 2635 OR Grade of "C" or better in EET 2633.
Description: Fundamentals of mechatronic systems and components. Different modelling approaches used for mechatronics systems, sensors and actuators, data acquisition and interfacing, signal conditioning, and PLC's. Previously offered as GENT 3503. Same course as MET 3803.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4050 Advanced Electronic Problems
Prerequisites: Junior standing and consent of head of department.
Description: Junior standing and consent of head of department. Special problems in the electronic area. Course previously offered as ECT 4050. Offered for variable credit, 1-4 credit hours, maximum of 4 credit hours.
Credit hours: 1-4
Contact hours: Contact: 1-4 Other: 1-4
Levels: Undergraduate
Schedule types: Independent Study
Department/School: Engineering Technology

EET 4314 Elements of Control
Prerequisites: "C" or better in EET 3113 AND "C" or better in EET 3363 AND "C" or better in EET 3423.
Description: Principles of analog and digital control, with emphasis on the analysis of feedback control systems in their various conceptual configurations. Application of feedback control theory to the analysis and design of present day circuits and systems. Use of circuit analysis software. Course previously offered as ECT 4314.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4323 Applied Artificial Intelligence
Prerequisites: "C" or better in EET 3303 AND "C" or better in EET 4813 AND ("C" or better in STAT 4033 OR "C" or better in STAT 4033).
Description: The course will follow a project based learning approach to introduce students with the theoretical and implantation of artificial intelligence algorithms. Topics include supervised learning, unsupervised learning, and deep reinforcement learning.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4363 Digital Signal Processing
Prerequisites: "C" or better in EET 3354 AND "C" or better in EET 3363.
Description: Introduction to Digital Signal Process. Theoretical development of Fourier transforms, IIR and FIR filters. Significant Design and programming projects.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

EET 4514 Advanced Telecommunication Topics
Prerequisites: "C" or better in EET 3533.
Description: Study of data transmission techniques between digital electronic devices.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 2 Contact: 5
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4654 Microwave Techniques
Prerequisites: "C" or better in EET 2635 OR EET 2633 AND "C" or better in EET 3354.
Description: Study of topics pertaining to VHF behavior of circuits and systems. Transmission line theory: wave equations, SWR, impedance calculations and transformations, and lossy lines. Extensive use of the Smith chart to solve transmission line problems. Introduction to Maxwell's equations, with emphasis on steady state. Wave propagation in rectangular waveguides. Introduction to antennas. Modeling of transistors at VHF, UHF, and microwave frequencies. Design and analysis of transistor amplifiers at VHF using y and s parameters. Designing LC impedance matching networks. Previously offered as ECT 4654.
Credit hours: 4
Contact hours: Lecture: 3 Lab: 3 Contact: 6
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4803 Mechatronic System Design
Prerequisites: Grade of "C" or better in EET 3423 and EET 3803 (can be concurrent enrollment in EET 3423 with instructor approval).
Description: Modelling of mechanical, electrical, and hydraulic components. Feedback control systems, electro-hydraulic drives, electrical drives, and microcontroller programming. Previously offered as GENT 4503. Same course as MET 4803.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4833 Industrial Project Design I
Prerequisites: ("C" or better in EET 3123 or EET 3124 AND ("C" or better in EET 3363 OR concurrently enrolled in EET 3363 with instructor approval)) OR ("C" or better in EET 3363 AND 10 credit hours of upper-division EET courses).
Description: Course mirrors the design process in industry. Topics covered are design team formation, identify objectives, define design specifications, write specifications, create a state of work and Gantt chart, create a project budget, perform a preliminary design review, design prototype. Previously offered as EET 4832 and ECT 4832.
Credit hours: 3
Contact hours: Lecture: 1 Lab: 4 Contact: 5
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4843 Industrial Project Design II
Prerequisites: "C" or better in EET 4833 OR a "C" or better in ENGR 4403 OR ENGR 4404.
Description: Student continues in the project steps of Change Board Review, Critical Design Review, developing & writing test specs., product fabrication and testing, formal technical report submission and outcomes assessment exam. May be substituted with ENGR 4403 OR ENGR 4404.
Credit hours: 3
Contact hours: Lecture: 1 Lab: 4 Contact: 5
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

EET 4903 Mechatronics of Autonomous Systems
Prerequisites: "C" or better in EET 3803 OR "C" or better in MET 3803.
Description: The course will follow a project based learning approach to introduce students with the mechatronics of autonomous systems.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

Undergraduate Programs

- Electrical Engineering Technology, BSET (http://catalog.okstate.edu/engineering-architecture-technology/electrical-engineering-technology/bset/)
- Electrical Engineering Technology: Computer, BSET (http://catalog.okstate.edu/engineering-architecture-technology/electrical-engineering-technology/computer-bset/)

Faculty

Imad Abouzahr, PhD, PE—Associate Professor and Program Coordinator
Assistant Professors: Ellis C. Nuckolls, MS, PE
Associate Professor (ENDEAVOR): Brian Norton, MS, PE