# Electrical Engineering Technology - Electronics Systems Major (ESET)

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Graduates of the Electrical Engineering Technology - Electronics Systems Major are prepared to pursue careers in diverse engineering-related fields such as computer design and repair, digital systems, microcomputer systems, microelectronics, and telecommunications.

Graduates earn an Associate of Applied Science degree. The curriculum also provides an effective foundation for transfer into a related bachelor's degree program.

For more information, please contact the Engineering and Information Technologies Division at (513) 569-1743.

To apply for this program at Cincinnati State, visit the Admissions (http://www.cincinnatistate.edu/academics/admission/) section of the College website.

## Electrical Engineering Technology - Electronics Systems Major (ESET)

| Semester 1 | | Lec | Lab | Credits |
|---|---|---|---|---|
| EET 100 | Introduction to Electrical Engineering Technology ( **B**) | 1 | 2 | 2 |
| ENG 101 | English Composition 1 ( **G**) | 3 | 0 | 3 |
| FYE 1XX First Year Experience (**B**) | | 1 | 0 | 1 |
| IT IXX Programming Elective (**B**) | | 2 | 3 | 3 |
| MAT XXX Mathematics Elective 1 (**G**) | | 3 | 2 | 4 |
| **Semester 2** | | | | |
| EET 131 | Circuit Analysis 1 ( **T**) | 3 | 2 | 4 |
| CIT 190 | Career Preparation: Engineering and Information Technologies ( **B**) | 1 | 0 | 1 |
| MAT XXX Mathematics Elective 2 (**B**) | | 3 | 2 | 4 |
| ENG 10X English Composition Elective (**G**) | | 3 | 0 | 3 |
| **Semester 3** | | | | |
| EET 132 | Circuit Analysis 2 ( **T**) | 3 | 2 | 4 |
| EET 291 | Full-Time Cooperative Education 1: Electronics Engineering Technology ( **B**) | 1 | 40 | 2 |
| **Semester 4** | | | | |
| ESET 251 | Electronics ( **T**) | 3 | 3 | 4 |
| EET 121 | Digital Systems 1 ( **T**) | 2 | 3 | 3 |
| ECO 1XX Economics Elective (**G**) | | 3 | 0 | 3 |
| EMET XXX EMET Technical Elective (**T**) | | 2 | 3 | 3 |
| **Semester 5** | | | | |
| EET 122 | Digital Systems 2 ( **T**) | 2 | 3 | 3 |
| ESET 220 | Microprocessors and Microcontrollers ( **T**) | 2 | 3 | 3 |
| NETC 121 | Network Communications 1 ( **B**) | 3 | 2 | 4 |
| PHY XXX Physics Elective (**G**) | | 3 | 2 | 4 |
| **Semester 6** | | | | |
| ESET 290 | Electronic Systems Engineering Technology Capstone Project ( **T**) | 2 | 4 | 4 |
| EET 292 | Full-Time Cooperative Education 2: Electronics Engineering Technology ( **T**) | 1 | 40 | 2 |
| **Total Credits:** | | **47** | **116** | **64** |

## Electives

**First Year Experience Elective**

| | | |
|---|---|---|
| FYE 100 | College Success Strategies: Overview | 1 |
| FYE 105 | College Success Strategies: Overview and Application | 2 |
| FYE 110 | College Success Strategies: Practice and Application | 3 |

**Programming Elective**

| | | |
|---|---|---|
| IT 100 | Computer Programming Foundations | 3 |
| IT 101 | Programming 1 | 3 |

**Mathematics Elective**

Take one of the following series:

| | | |
|---|---|---|
| MAT 125 & MAT 126 | Algebra and Trigonometry and Functions and Calculus | |
| Or | | |
| MAT 251 & MAT 252 | Calculus 1 and Calculus 2 | |

**English Composition Elective**

| | | |
|---|---|---|
| ENG 102 | English Composition 2: Contemporary Issues | 3 |
| ENG 103 | English Composition 2: Writing about Literature | 3 |
| ENG 104 | English Composition 2: Technical Communication | 3 |

| | | |
|---|---|---|
| ENG 105 | English Composition 2: Business Communication | 3 |
| **Economics Elective** | | |
| ECO 105 | Principles of Microeconomics | 3 |
| ECO 110 | Principles of Macroeconomics | 3 |
| **EMET Technical Elective** | | |
| EMET 141 | Programmable Logic Controllers | 3 |
| EMET 180 | Process Instrumentation | 3 |
| EMET 245 | Laser 1 | 3 |
| EMET 252 | Motors, Motor Controls, and Variable Drives | 3 |
| EMET 270 | Robotics and Servomechanisms | 3 |
| **Physics Elective** | | |
| PHY 151 | Physics 1: Algebra and Trigonometry-Based | 4 |
| PHY 201 | Physics 1: Calculus-Based | 5 |

Some courses are offered in alternative versions identified with a letter after the course number-- for example, ENG 101 and ENG 101A.

- This curriculum displays only course numbers without the added letter.
- The alternative version, when available, meets the requirements of the course version without the added letter.

The letters G, B, and T (displayed after course titles or elective descriptions) identify types of courses required by the Ohio Department of Higher Education as part of an associate's degree curriculum.

G = General Education course in this curriculum

B = Basic Skills course in this curriculum

T = Technical course in this curriculum

# Electrical Engineering Technology - Electronics Systems Major (ESET)

- An ability to select and apply a knowledge of mathematics, science, engineering and technology to engineering technology problems that require the application of principles and applied procedures or methodologies.
- An ability to function effectively as a member or leader on a technical team.
- An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.
- An ability to conduct standard tests and measurements; to conduct, analyze and interpret experiments; and to apply experimental results to improve processes.
- A commitment to quality, timeliness, and continuous improvement.
- An ability to apply project management techniques to electrical/electronic(s) systems development.
- An ability to proficiently apply circuit analysis and design, computer programming, associated software, analog and digital electronics, microcontroller technology, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.
- An ability to integrate and synthesize technical information to resolve discrepancies requiring electrical or electronic knowledge.

# Faculty

## Program Chair

Ralph Whaley, Jr., PhD
ralph.whaley@cincinnatistate.edu

## Co-op Coordinator

Noelle Grome, MEd, MS
noelle.grome@cincinnatistate.edu

## Engineering and Information Technologies Division Advising

(513) 569-1743

# EET Courses

**EET 100 Introduction to Electrical Engineering Technology**
**2 Credits. 1 Lecture Hour. 2 Lab Hours.**
An introduction to concepts and measuring skills for the electronics field. Topics include: current, voltage, power, Ohm's law, series circuits, meter reading, software simulation use, and circuit construction.
Prerequisites: MAT 093 or appropriate placement

**EET 101 Electronic Fundamentals 1**
**3 Credits. 2 Lecture Hours. 3 Lab Hours.**
A course on electrical fundamentals for non-electrical majors. Topics include: DC and AC circuit theory, electrical motors and controls, electromagnetic devices, and transformers.
Prerequisites: Placement into ENG 101A, and MAT 096 or MAT 124 or appropriate Math placement

**EET 121 Digital Systems 1**
**3 Credits. 2 Lecture Hours. 3 Lab Hours.**
A course on analyzing, designing, and troubleshooting digital logic circuits. Topics include: basic gates and programmable logic devices (PLDs); number systems and codes; Boolean algebra; circuit simplification; and functions of logic circuits, latches, flip-flops, counters, timers, and memory.
Prerequisites: MAT 124 (minimum grade C) or appropriate Math placement
Corequisites: EET 131 : Circuit Analysis 1

**EET 122 Digital Systems 2**
**3 Credits. 2 Lecture Hours. 3 Lab Hours.**
A continuation of EET 121. Topics include: counter design and cascading, shift registers, PLD applications, microprocessor registers, input/output (I/O), busses, direct memory access (DMA), memory expansion, and assembly language programming.
Prerequisites: EET 121 (minimum grade C)

**EET 131 Circuit Analysis 1**
**4 Credits. 3 Lecture Hours. 2 Lab Hours.**
A course on DC electric circuits. Topics include: current, voltage, resistance, and power; laws applied to series, parallel, and series-parallel circuits; Thevenin's, Superposition, and Norton's theorems; steady state and transient behavior of capacitive and inductive devices; and magnetic properties.
Prerequisites: MAT 124 (minimum grade C) or appropriate Math placement
Corequisites: EET 100 : Introduction to Electrical Engineering Technology or EMET 150 : Introduction to Controls and Robotics
Ohio Transfer Assurance Guide Approved

**EET 132 Circuit Analysis 2**
**4 Credits. 3 Lecture Hours. 2 Lab Hours.**
A continuation of EET 131. Topics include: sinusoidal wave characteristics; complex numbers; phasors; transformers; RC, RL, and RLC networks; filter networks; three-phase and poly-phase systems; and power factor analysis.
Prerequisites: EET 131, and MAT 125 or appropriate Math placement (minimum grade C for both)
Ohio Transfer Assurance Guide Approved

**EET 191 Part-Time Cooperative Education 1: Electronics Engineering Technology**
**1 Credit. 1 Lecture Hour. 20 Lab Hours.**
Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: None

**EET 192 Part-Time Cooperative Education 2: Electronics Engineering Technology**
**1 Credit. 1 Lecture Hour. 20 Lab Hours.**
Students seeking an associate's degree participate in their second part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 191

**EET 193 Part-Time Cooperative Education 3: Electronics Engineering Technology**
**1 Credit. 1 Lecture Hour. 20 Lab Hours.**
Students seeking an associate's degree participate in their third part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 192

**EET 194 Part-Time Cooperative Education 4: Electronics Engineering Technology**
**1 Credit. 1 Lecture Hour. 20 Lab Hours.**
Students seeking an associate's degree participate in their fourth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 193

**EET 195 Part-Time Cooperative Education 5: Electronics Engineering Technology**
**1 Credit. 1 Lecture Hour. 20 Lab Hours.**
Students seeking an associate's degree participate in their fifth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 194

**EET 196 Part-Time Cooperative Education 6: Electronics Engineering Technology**
**1 Credit. 1 Lecture Hour. 20 Lab Hours.**
Students seeking an associate's degree participate in their sixth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 195

**EET 291 Full-Time Cooperative Education 1: Electronics Engineering Technology**
**2 Credits. 1 Lecture Hour. 40 Lab Hours.**
Students seeking an associate's degree participate in their first full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: None

**EET 292 Full-Time Cooperative Education 2: Electronics Engineering Technology**
**2 Credits. 1 Lecture Hour. 40 Lab Hours.**
Students seeking an associate's degree participate in their second full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 291

**EET 293 Full-Time Cooperative Education 3: Electronics Engineering Technology**
**2 Credits. 1 Lecture Hour. 40 Lab Hours.**
Students seeking an associate's degree participate in their third full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 292

**EET 294 Internship 1: Electronics Engineering Technology**
**2 Credits. 1 Lecture Hour. 40 Lab Hours.**
Students seeking an associate's degree participate in their first unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 131 and CIT 190

**EET 295 Internship 2: Electronics Engineering Technology**
**2 Credits. 1 Lecture Hour. 40 Lab Hours.**
Students seeking an associate's degree participate in their second unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 294

## ESET Courses

**ESET 220 Microprocessors and Microcontrollers**
**3 Credits. 2 Lecture Hours. 2 Lab Hours.**
A course on designing, programming, and troubleshooting microprocessor systems and applications. Topics include: assembly language programming, interrupt and polled input/output (I/O), interrupt service routines, parallel ports, timer functions, serial interfaces, analog-to-digital (A/D) converters, and external hardware interfaces. This course is offered online only.
Prerequisites: IT 100 or IT 101, and EET 121

**ESET 251 Electronics**
**4 Credits. 3 Lecture Hours. 3 Lab Hours.**
A course on semiconductor and amplifier theory and application. Topics include: diode circuits and basic power supplies; bipolar transistor, field-effect transistor (FET), thyristor, and operational amplifier theory; inverters; circuit construction; and troubleshooting.
Prerequisites: EET 132 (minimum grade C)
Ohio Transfer Assurance Guide Approved

**ESET 290 Electronic Systems Engineering Technology Capstone Project**
**4 Credits. 2 Lecture Hours. 4 Lab Hours.**
Students design a system using analog and digital electronics concepts, and prepare and deliver a professional presentation of their completed project. Topics include: design theory, feasibility study, engineering economics, and presentation skills.
Prerequisites: EET 122 and ESET 251