

# ELECTRICAL ENGINEERING AND RELATED TECHNOLOGIES (EERT)

## EERT 10192 OVERHEAD LINE TECHNOLOGY PRACTICUM I (ELR) 5 Credit Hours

Practical application of electrical overhead line worker job duties in a setting under direct supervision of First Energy Personnel. Prior to enrollment, students must be accepted into the First Energy Power Systems Institute (PSI).

**Prerequisite:** Special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 15 other

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

## EERT 10292 OVERHEAD LINE TECHNOLOGY II PRACTICUM (ELR) 5 Credit Hours

Supervised practical application of electrical overhead line worker duties including the use of ladders, rescue operations, and transformers under the supervision of FirstEnergy personnel.

**Prerequisite:** EERT 10192; and special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 15 other

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

## EERT 12000 ELECTRIC CIRCUITS I 4 Credit Hours

Direct current circuit analysis involving current and voltage, resistance, energy and power, Ohm's law, series and parallel networks. Mesh and nodal analysis, network theorems and DC instruments.

**Corequisite:** MATH 11010.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** CTAG Electrical Engineer Technology, TAG Engineering Technology

## EERT 12001 ELECTRIC CIRCUITS II 3 Credit Hours

Analysis of capacitive, inductance and magnetic circuits and transients in R-L-C combinations. AC network analysis: mesh and nodal, phasor algebra, power factor, resonance.

**Prerequisite:** EERT 12000.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## EERT 12005 ELECTRICAL/ELECTRONIC DRAWING 2 Credit Hours

Electrical Electronic drawing techniques using current computer-aided design software emphasizing schematic, block and wiring diagrams, document markups, circuit board printing, circuit or power layout is covered as needed.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**EERT 12010 INTRODUCTION TO ELECTRONICS 4 Credit Hours**  
Semiconductor theory. Properties and application of PN junctions and bipolar junction transistors, amplifiers, field effect transistors (FET) amplifiers, JFET and MOSFET biasing and their use in simple circuits.

**Prerequisite:** EERT 12000.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## EERT 20192 OVERHEAD LINE TECHNOLOGY III PRACTICUM (ELR) 5 Credit Hours

Supervised practical applications of electrical line worker job duties under the supervision of FirstEnergy personnel. Emphasis on URD equipment, grounding distribution circuits and working with energized three phase circuits.

**Prerequisite:** EERT 10292; and special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 15 other

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

## EERT 20292 OVERHEAD LINE TECHNOLOGY PRACTICUM IV (ELR) 5 Credit Hours

Supervised practical application of electrical overhead line worker job duties under the direct supervision of FirstEnergy personnel. Emphasis on line equipment, hot line tools, and transmission.

**Prerequisite:** EERT 20192; and special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 15 other

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

## EERT 21010 ENGINEERING AND PROFESSIONAL ETHICS 3 Credit Hours

Application of codes of ethics in the engineering and technology profession reflective of social and moral responsibilities to the public and accountability in engineering practice.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## EERT 21096 INDIVIDUAL INVESTIGATION IN ELECTRICAL/ ENGINEERING TECHNOLOGY 1-4 Credit Hours

(Repeatable for credit) Independent in depth research of an electrical electronic engineering technology topic supervised and coordinated by an engineering technology faculty member.

**Prerequisite:** Permission.

**Schedule Type:** Individual Investigation

**Contact Hours:** 1-4 other

**Grade Mode:** Standard Letter

## EERT 22000 ELECTRICITY/ELECTRONICS WITH APPLICATIONS 3 Credit Hours

Basic electronics theory and fundamental concepts of electrical/electronic and digital circuits with applications in the various fields of engineering.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**EERT 22002 INDUSTRIAL CONTROLS 3 Credit Hours**

Introduction to control of AC and DC machinery by electromechanical and solid state devices. Study of circuits, troubleshooting methods and logic systems.

**Prerequisite:** EERT 12010 or EERT 22000; and special approval.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**EERT 22004 DIGITAL SYSTEMS 4 Credit Hours**

Modern integrated digital logic families. Analysis and design of digital circuits such as gates, multivibrators, comparators, counters, registers including interface, control memory and computer circuits. Programmable logic controllers and integrated circuit technologies.

**Prerequisite:** None.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** CTAG Electrical Engineer Technology

**EERT 22005 ELECTRONIC INSTRUMENTATION 3 Credit Hours**

Understanding of automation control and process characteristics. Application of various type of measurement devices & control equipments. Use of modern simulation software for process control and troubleshooting.

**Prerequisite:** EERT 12010.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**EERT 22006 ELECTRICAL MACHINES 3 Credit Hours**

Introduction to transformer action, losses and efficiency. Fundamentals of DC and AC motors and generators and three phase systems.

**Prerequisite:** EERT 12001.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**EERT 22011 ELECTRONIC SYSTEMS 2 Credit Hours**

Continuation of EERT 12010. Frequency effects, Miller's Theorem, decibel notation and negative feedback, Oscillators, Op-amps, circuits and applications, Thyristors and electronically regulated power supplies.

**Prerequisite:** EERT 12010.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 1 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

**EERT 22014 MICROPROCESSORS AND ROBOTICS 3 Credit Hours**

An introduction to microprocessor system fundamentals, number systems, binary codes, hexa- decimal codes, Programming fundamentals in C, C++ software, Microcontroller hardware architecture and instruction set, with applications to robot systems motor control, sensors.

**Prerequisite:** None.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

**EERT 22016 PRODUCTIVITY SOFTWARE FOR INDUSTRY 1 Credit Hour**

(Repeatable for a maximum of 3 credit hours) Introduces students to the use of computers for word processing, spreadsheets and database management applications. Students receive hands-on training on the use of the software applicable to engineering problems using hands-on formats.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 1 lab

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**EERT 22018 PC/NETWORK ENGINEERING AND TROUBLESHOOTING 3 Credit Hours**

Covers the service, maintenance, upgrade and optimization of personal computers. Specification, installation and maintenance of local area networks is covered. Students learn communication protocols and network architecture. Two lectures and two labs.

**Prerequisite:** None.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**EERT 22095 SPECIAL TOPICS IN ELECTRICAL/ELECTRONIC AND RELATED ENGINEERING TECHNOLOGIES 1-3 Credit Hours**

(Repeatable for credit) Special topics in electrical/electronic engineering technology.

**Prerequisite:** Permission.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

**EERT 23000 SENSORS 2 Credit Hours**

A study of sensors, transducers, relays, solenoids, servomotors, actuators, lasers, LEDs, photonic and temperature sensors and electronic devices in electromechanical control.

**Prerequisite:** Sophomore standing.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 other

**Grade Mode:** Standard Letter

**EERT 32003 TECHNICAL COMPUTING 3 Credit Hours**

A hands-on introduction to computation, through object-oriented programming and problem solving. Programming in the C++ language.

**Prerequisite:** MATH 11010.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**EERT 32005 INSTRUMENTATION 3 Credit Hours**

Introduction to modern industrial controls, interfacing devices, transducer systems, and process control methods.

**Prerequisite:** Junior Standing.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 lecture, 1 lab

**Grade Mode:** Standard Letter