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: Practicum or Internship
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: Practicum or Internship
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, inductive and magnetic circuits and transients in R-L-C combinations. AC network analysis: mesh and nodal, phasor algebra, power factor, resonance.
Prerequisite: EERT 12000.
Corequisite: MATH 11012 or 19002.
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 computer-aided design emphasizing schematic, block and wiring diagrams. Either printed, 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 12092 OVERHEAD LINE TECHNOLOGY III PRACTICUM (ELR) 5 Credit Hours
Supervised practical applications of electrical line worker job duties under the direct 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: Practicum or Internship
Contact Hours: 15 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

EERT 12092 OVERHEAD LINE TECHNOLOGY PRACTICUM IV (ELR) 5 Credit Hours
Supervised practical application of electrical overhead line worker 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: Practicum or Internship
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: 2 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 22007  INDUSTRIAL MOTOR CONTROL AND APPLICATION  3 Credit Hours
Application and use of DC, single and polyphase electric motors and industrial control systems. Construction, troubleshooting and operation of starting systems is emphasized.
Prerequisite: EERT 22000.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
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 22015  ROBOTICS AND ADVANCED MICROSYSTEMS  3 Credit Hours
An advanced course in microprocessor software and hardware. Input/output devices and interfacing with applications to robotics. Troubleshooting and design of microprocessor controlled systems.
Prerequisite: EERT 22014.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

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.
Corequisite: 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