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, 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.
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 120192  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 20192  OVERHEAD LINE TECHNOLOGY PRACTICUM I (ELR)  5 Credit Hours
Supervised practical application of electrical overhead line worker job duties under the direct supervision of First Energy Personnel. Emphasis on URD equipment, hot line tools, and transmission.
Prerequisite: EERT 12000.
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 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
## Electrical Engineering and Related Technologies (EERT)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Description</th>
<th>Prerequisite</th>
<th>Schedule Type</th>
<th>Contact Hours</th>
<th>Grade Mode</th>
<th>Attributes</th>
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<tbody>
<tr>
<td>EERT 22002</td>
<td>INDUSTRIAL CONTROLS</td>
<td>3</td>
<td>Introduction to control of AC and DC machinery by electromechanical and solid state devices. Study of circuits, troubleshooting methods and logic systems.</td>
<td>EERT 12010 or EERT 22000; and special approval.</td>
<td>Lecture</td>
<td>3 lecture, 2 lab</td>
<td>Standard Letter</td>
<td></td>
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<tr>
<td>EERT 22004</td>
<td>DIGITAL SYSTEMS</td>
<td>4</td>
<td>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</td>
<td>None.</td>
<td>Combined Lecture and Lab</td>
<td>2 lecture, 2 lab</td>
<td>Standard Letter</td>
<td>CTAG Electrical Engineer Technology</td>
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<tr>
<td>EERT 22005</td>
<td>ELECTRONIC INSTRUMENTATION</td>
<td>3</td>
<td>Understanding of automation control and process characteristics. Application of various type of measurement devices &amp; control equipments.Use of modern simulation software for process control and troubleshooting.</td>
<td>EERT 12010.</td>
<td>Lecture</td>
<td>2 lecture, 2 lab</td>
<td>Standard Letter</td>
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<tr>
<td>EERT 22006</td>
<td>ELECTRICAL MACHINES</td>
<td>3</td>
<td>Introduction to transformer action, losses and efficiency. Fundamentals of DC and AC motors and generators and three phase systems.</td>
<td>EERT 12001.</td>
<td>Lecture</td>
<td>3 lecture</td>
<td>Standard Letter</td>
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<tr>
<td>EERT 22007</td>
<td>INDUSTRIAL MOTOR CONTROL AND APPLICATION</td>
<td>3</td>
<td>Application and use of DC, single and polyphase electric motors and industrial control systems. Construction, troubleshooting and operation of starting systems is emphasized.</td>
<td>EERT 22000.</td>
<td>Combined Lecture and Lab</td>
<td>2 lecture, 2 lab</td>
<td>Standard Letter</td>
<td></td>
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<tr>
<td>EERT 22011</td>
<td>ELECTRONIC SYSTEMS</td>
<td>2</td>
<td>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.</td>
<td>EERT 12010.</td>
<td>Combined Lecture and Lab</td>
<td>1 lecture, 2 lab</td>
<td>Standard Letter</td>
<td>TAG Engineering Technology</td>
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<tr>
<td>EERT 22014</td>
<td>MICROPROCESSORS AND ROBOTICS</td>
<td>3</td>
<td>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.</td>
<td>none.</td>
<td>Lecture or Lab</td>
<td>2 lecture, 2 lab</td>
<td>Standard Letter</td>
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<td>EERT 22000</td>
<td>RELATED ENGINEERING TECHNOLOGIES</td>
<td>1-3</td>
<td>(Repeatable for credit) Special topics in electrical/electronic and related engineering technologies</td>
<td>none.</td>
<td>Lecture or Lab</td>
<td>1-3 lecture</td>
<td>Satisfactory/Unsatisfactory-IP</td>
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<td>EERT 22018</td>
<td>PC/NETWORK ENGINEERING AND TROUBLESHOOTING</td>
<td>3</td>
<td>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.</td>
<td>none.</td>
<td>Combined Lecture and Lab</td>
<td>2 lecture, 2 lab</td>
<td>Standard Letter</td>
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<tr>
<td>EERT 22095</td>
<td>SPECIAL TOPICS IN ELECTRICAL/ELECTRONIC AND</td>
<td>1-3</td>
<td>(Repeatable for credit)Special topics in electrical/electronic engineering technology</td>
<td>Permission.</td>
<td>Lecture or Lab</td>
<td>1-3 lecture</td>
<td>Standard Letter</td>
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<td>EERT 23000</td>
<td>SENSORS</td>
<td>2</td>
<td>A study of sensors, transducers, relays, solenoids, servomotors, actuators, lasers, LEDs, photonic and temperature sensors and electronic devices in electromechanical control.</td>
<td>Sophomore standing.</td>
<td>Combined Lecture and Lab</td>
<td>2 other</td>
<td>Standard Letter</td>
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**Attributes:**
- TAG Engineering Technology
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