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: EERT 10192; and special approval.
Schedule Type: Practical Experience
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
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.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Grade Mode: Standard Letter
Attributes: TAG 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
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
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 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: Practical Experience
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 URD equipment, hot line tools, and transmission.
Prerequisite: EERT 20192; and special approval.
Schedule Type: Practical Experience
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
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
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
Grade Mode: Standard Letter
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Description</th>
</tr>
</thead>
<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. Prerequisite: EERT 12010 or EERT 22000; and special approval.</td>
</tr>
<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 circuit technologies. Prerequisite: None.</td>
</tr>
<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. Prerequisite: EERT 12010.</td>
</tr>
<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. Prerequisite: EERT 12001.</td>
</tr>
<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. Prerequisite: EERT 12010.</td>
</tr>
<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. Prerequisite: None.</td>
</tr>
<tr>
<td>EERT 22016</td>
<td>PRODUCTIVITY SOFTWARE FOR INDUSTRY</td>
<td>1</td>
<td>(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.</td>
</tr>
<tr>
<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. Prerequisite: None.</td>
</tr>
<tr>
<td>EERT 220005</td>
<td>SPECIAL TOPICS IN ELECTRICAL/ELECTRONIC AND RELATED ENGINEERING TECHNOLOGIES</td>
<td>1-3</td>
<td>(Repeatable for credit) Special topics in electrical/electronic engineering technology. Prerequisite: Permission.</td>
</tr>
<tr>
<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. Prerequisite: Sophomore standing.</td>
</tr>
<tr>
<td>EERT 32003</td>
<td>TECHNICAL COMPUTING</td>
<td>3</td>
<td>A hands-on introduction to computation, through object-oriented programming and problem solving. Programming in the C++ language. Prerequisite: MATH 11010.</td>
</tr>
<tr>
<td>EERT 32005</td>
<td>INSTRUMENTATION</td>
<td>3</td>
<td>Introduction to modern industrial controls, interfacing devices, transducer systems, and process control methods. Prerequisite: Junior Standing.</td>
</tr>
</tbody>
</table>

**Attributes:**
- **Standard Letter**
- **CTAG Electrical Engineer Technology**
- **MATH 11010**
- **Sophomore standing.**
- **Permission.**
- **Junior Standing.**
- **TAG Engineering Technology**