

ELECTRICIAN (ELTR)

ELTR 101. Electrical Industry and Safety

Credits: 3

Prerequisite: Admitted into Electrician Technician Program or departmental approval.

Typically Offered: FALL

This course provides comprehensive training on OSHA regulations and workplace safety in the electrical industry. Students will learn to identify and mitigate workplace hazards, apply lockout/tagout (LOTO) procedures, and implement proper hand and power tool safety techniques. The course covers electrical shock hazards, arc flash safety, define qualified person, fire prevention, hazardous chemical handling, ladder and scaffolding safety, PPE, and multimeter usage. Additionally, students will gain essential first aid and CPR skills, as well as industry-specific safety practices for solar, wind, industrial, power, and oil/gas sites. Workplace communication, and jobsite task management. Through hands-on activities, module quizzes, and a final assessment, students will demonstrate their knowledge of electrical safety. Successful completion of the course will result in OSHA 10-Hour General Industry Certification.

ELTR 110. National Electrical Code I

Credits: 2

Prerequisite: Admitted into Electrician Technician program or departmental approval.

Typically Offered: FALL

This course provides a comprehensive introduction to the National Electrical Code (NEC), focusing on its structure, language, and application. Students will develop a foundational understanding of how to navigate the NEC efficiently, utilizing a provided workbook designed to enhance comprehension. This course specifically covers Articles 90-315 of the NEC, addressing fundamental electrical principles, installation requirements, and safety standards. Additionally, students will gain insight into the North Dakota Wiring Standards, ensuring a thorough grasp of both national and state-specific electrical regulations.

ELTR 111. National Electrical Code II

Credits: 2

Prerequisite: Admitted into Electrician Technician Program and successful completion of ELTR 110 or departmental approval.

Typically Offered: SPRING

This course provides an in-depth examination of Chapters 4-8 of the National Electrical Code (NEC), building on the foundational principles covered in ELEC 110. Students will explore the requirements for equipment for general use, special occupancies, special equipment, and communications systems. Through lectures, discussions, and practical applications, students will gain a deeper understanding of the NEC's requirements and how to apply them in real-world electrical installations.

ELTR 112. Residential Wiring

Credits: 5

Prerequisite: Admitted into Electrician Technician program or departmental approval.

Typically Offered: FALL

This hands on course introduces students to the fundamentals of residential wiring, including proper wiring methods, tool identification and usage, and an introduction to print reading. Students will learn the essential skills and knowledge required to safely and effectively install, maintain, and repair residential electrical systems.

ELTR 113. Commercial/Industrial Wiring

Credits: 5

Prerequisite: Admitted into Electrician Technician program and successful completion of ELTR 112 or departmental approval.

Typically Offered: SPRING

This course builds on the foundational knowledge and skills acquired in ELTR 112 Residential Wiring. Students will explore the principles and practices of commercial and industrial wiring, including the installation, maintenance, and repair of electrical systems in commercial and industrial settings.

ELTR 114. Conduits and Practical Skills

Credits: 3

Prerequisite: Admitted into Electrician Technician program or departmental approval.

Typically Offered: SPRING

This hands on course introduces students to the fundamental skills and techniques required for bending and fabricating electrical conduit systems. Students will learn to work with various types of conduit materials, including Electrical Metallic Tubing (EMT), rigid conduit, and flexible conduit. Through a combination of lectures, demonstrations, and lab exercises, students will develop the skills and confidence needed to properly bend and fabricate conduit systems for residential, commercial, and industrial electrical installations.

ELTR 206. Advanced Electrical Concepts

Credits: 3

Prerequisite: Admitted into Electrician Technician program and successful completion of ENRT 106 and ENRT 108 or departmental approval.

Typically Offered: SPRING

This course focuses on the practical application of trigonometry in the electrical industry, emphasizing essential mathematical concepts used on job sites. Topics include AC circuit analysis, power factor correction, phase relationships, transformer and motor design, three-phase systems, and conduit bending. Through hands on exercises and real world scenarios, students will develop the skills needed for electrical system design, troubleshooting, and installation. The course also provides an in-depth study of electrical systems and motor controls, covering transformer connections, overcurrent protection, motor load calculations, and troubleshooting techniques. Students will explore single-phase motor concepts, wiring, short circuit analysis, and voltage drop calculations. A combination of lectures, discussions, and lab exercises will ensure a comprehensive understanding of electrical systems and motor controls.

ELTR 210. National Electrical Code III

Credits: 2

Prerequisite: Admitted into Electrician Technician program and successful completion of ELTR 111 or departmental approval.

Typically Offered: SPRING

This course provides an in depth examination of Chapter 9 of the National Electric Code (NEC), which covers tables and examples. Students will also explore Annexes C and D, which provide additional information on conduit and tubing fill calculations and examples. Through a combination of lectures, discussions, and practical applications, students will gain a comprehensive understanding of the NEC's requirements for electrical installations.

ELTR 230. Electrician Work Study

Credits: 6

Prerequisite: Completion of first-year Electrician Technician program or departmental approval.

Typically Offered: FASPSU

This hands on work study course provides students with practical experience in the electrical trade, working under the close supervision of a licensed Journeyman Electrician. Students will apply theoretical knowledge gained in the classroom to real world electrical installations, maintenance, and repair scenarios, developing essential skills and competencies required for success in the electrical trade industry.