



9059

ADVANCED RESIDENTIAL
WIRING (12A)

40S/40E/40M

An Electrical Trades Technology Course

9059: ADVANCED RESIDENTIAL WIRING (12A) 40S/40E/40M

Course Description

Students will build on the knowledge and skills that they learned in residential wiring, including home automation technologies, and service and demand load calculations.

Goal 1: Describe and apply **health and safety** practices.

GLO 1.1: Describe and apply **health and safety** practices.

- SLO 12A.1.1.1: Identify safety and health requirements. (A2.1)
- SLO 12A.1.1.2: Describe the importance of using personal protective equipment (PPE), and identify PPE and procedures related to PPE. (A2.2) (TSA 16)
- SLO 12A.1.1.3: Outline the safety principles for working on and around electrical equipment. (A2.3) (TSA 18)
- SLO 12A.1.1.4: Identify fire safety and outline workplace fire safety principles. (A2.4) (TSA 19)
- SLO 12A.1.1.5: Recognize and control hazards. (A2.6)
- SLO 12A.1.1.6: Identify the hazards in confined spaces and the preparation needed to work in a confined space. (A2.7) (TSA 20)
- SLO 12A.1.1.7: Identify first aid/CPR. (A2.8)
- SLO 12A.1.1.8: Explain the Workplace Hazardous Material Information System (WHMIS), and identify the safety requirements as they apply to WHMIS. (A2.9) (TSA 13)
- SLO 12A.1.1.9: Identify and control hazards. (A2.10)
- SLO 12A.1.1.10: Create and maintain a safe and organized working environment.

GLO 1.2: Demonstrate awareness of electrical safety as it pertains to the ***Trade Safety Awareness Manual***.

No applicable SLOs.

Goal 2: Demonstrate the safe and appropriate **identification, selection, operation, maintenance, and management of equipment and tools.**

GLO 2.1: Demonstrate the safe and appropriate **identification, selection, operation, maintenance, and management of equipment and tools.**

SLO 12A.2.1.1: Demonstrate the safe and appropriate identification, selection, and operation of equipment and tools (e.g., mega ohmmeter).

Goal 3: Demonstrate the safe and appropriate **identification, selection, installation, maintenance, and management of devices and materials.**

GLO 3.1: Demonstrate the safe and appropriate **identification, selection, installation, maintenance, and management of devices and materials.**

SLO 12A.3.1.1: Demonstrate the safe and appropriate identification, selection, installation, maintenance, and management of devices and materials used in service installations.

Goal 4: Demonstrate an understanding of **electrical theory.**

GLO 4.1: Demonstrate an understanding of **electrical theory.**

SLO 12A.4.1.1: Demonstrate an understanding of home automation technologies (e.g., programmable thermostats, remote control lighting, security systems, etc.).

Goal 5: Demonstrate an understanding of the **design, layout, and interpretation of branch circuits and systems.**

GLO 5.1: Demonstrate an understanding of the **design, layout, and interpretation of branch circuits and systems.**

SLO 12A.5.1.1: Design and interpret home automation technologies (e.g., programmable thermostats, remote control lighting, security systems, etc.).

SLO 12A.5.1.2: Select components based on service calculations for single phase 3 wire, 120/240V.

Goal 6: Demonstrate the procedures used to **install and terminate branch circuits and systems.**

GLO 6.1: Demonstrate the procedures used to **install and terminate branch circuits and systems.**

- SLO 12A.6.1.1: Install and terminate basic home automation technologies (e.g., programmable thermostats, remote control lighting, security systems, etc.).
- SLO 12A.6.1.2: Install and terminate residential systems.
- SLO 12A.6.1.3: Ensure the aesthetic appearance of electrical installations (e.g., using drop sheets, patching holes, etc.).
- SLO 12A.6.1.4: Describe and demonstrate various mounting methods for residential applications. (A6.4)

Goal 7: Demonstrate an understanding of the **testing, troubleshooting, and documentation of branch circuits and systems.**

GLO 7.1: Demonstrate an understanding of the **testing, troubleshooting, and documentation of branch circuits and systems.**

- SLO 12A.7.1.1: Test, troubleshoot, and document home automation technologies (e.g., programmable thermostats, remote control lighting, security systems, etc.).

Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills.

GLO 8.1: **Read, interpret, and communicate** information.

- SLO 12A.8.1.1: Read, interpret, and communicate information from unfamiliar schematic diagrams.

GLO 8.2: Apply the knowledge and skills from **mathematics.**

- SLO 12A.8.2.1 Calculate demand load for residential service requirements.
- SLO 12A.8.2.2 Correctly manipulate the scales found on blueprints.
- SLO 12A.8.2.3 Describe and demonstrate how to plot data on graphs. (A4.4)

GLO 8.3: Apply the knowledge and skills from the **sciences.**

No applicable SLOs.

GLO 8.4: Apply the knowledge and skills from **information and communication technology**.

No applicable SLOs.

Goal 9: Understand **career opportunities and working conditions**.

GLO 9.1: Describe **apprenticeship, education, career opportunities, professional organizations, and working conditions** related to electrical trades technology and associated fields.

SLO 12A.9.1.1: Demonstrate an awareness of the variety of working conditions (i.e., weather conditions, sanitation facilities, isolated locations, hours) found in the electrical trades, including residential, commercial, industrial, power electrician, etc.

Goal 10: Demonstrate awareness of **sustainability**.

GLO 10.1: Describe the impact of **human sustainability** on the health and well-being of tradespersons working in the electrical trades and those who use their services.

SLO 12A.10.1.1: Demonstrate an awareness of the long-term health concerns associated with the electrical trades.

SLO 12A.10.1.2: Identify ergonomics. (A2.5)

GLO 10.2: Describe the electrical trade's **sustainability practices and impact on the environment**.

SLO 12A.10.2.1: Minimize wastage of materials.

SLO 12A.10.2.2: Demonstrate an awareness of the recycling of used copper and aluminium.

GLO 10.3: Describe **sustainable business practices** within the electrical trades.

SLO 12A.10.3.1: Demonstrate an understanding of the importance of effective price management.

Goal 11: Demonstrate awareness of **ethical and legal standards** as they pertain to the electrical trades.

GLO 11.1: Demonstrate awareness of **ethical and legal standards**.

SLO 12A.11.1.1: Demonstrate ethical behaviour (including respecting the property of others) while working at a workplace.

SLO 12A.11.1.2: Demonstrate the purpose of building permits and their use in the electrical trades.

GLO 11.2: Demonstrate an understanding of **electrical codes**.

SLO 12A.11.2.1: Demonstrate awareness of building codes that pertain to the electrical trades, but are not found in the CEC.

SLO 12A.11.2.2: Describe the installation and maintenance of power distribution and perform service calculations for single phase 3 wire (120/240V). (A5.8)

Goal 12: Demonstrate **employability skills**.

GLO 12.1: Demonstrate **fundamental employability skills**.

SLO 12A.12.1.1: Demonstrate regular and punctual attendance.

SLO 12A.12.1.2: Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.

SLO 12A.12.1.3: Demonstrate accountability by taking responsibility for their actions.

SLO 12A.12.1.4: Demonstrate adaptability, initiative, and effort.

SLO 12A.12.1.5: Demonstrate teamwork skills.

SLO 12A.12.1.6: Demonstrate the ability to stay on task and effectively use time in class and work environments.

SLO 12A.12.1.7: Demonstrate the responsible use of wireless communication devices.

GLO 12.2: Demonstrate an awareness of **cultural competence** and its importance in the workplace.

SLO 12A.12.2.1: Demonstrate an awareness of the need to interact positively with people of different cultures in society and in the workplace.

GLO 12.3: Demonstrate an understanding of the **business operation** of an electrical trades facility.

SLO 12A.12.3.1: Participate in classroom and workstation cleanup.

SLO 12A.12.3.2: Develop material take off lists from information on blueprint or site assessment.

SLO 12A.12.3.3: Source and price materials.

GLO 12.4: Demonstrate **critical thinking skills** in planning, procedures, analysis, and diagnosis.

SLO 12A.12.4.1: Demonstrate critical-thinking skills.

SLO 12A.12.4.2: Use a variety of strategies in order to diagnose and solve problems.

Goal 13: Understand the **evolution, technological progression, and emerging trends** in the electrical trades.

GLO 13.1: Understand the **evolution, technological progression, and emerging trends** in the electrical trades.

SLO 12A.13.1.1: Demonstrate an awareness of the evolution, technological progression, and emerging trends in residential wiring.
