



9056

ELECTRICAL TRADES
DC FUNDAMENTALS (11A)

30S/30E/30M

An Electrical Trades Technology Course

9056: ELECTRICAL TRADES DC FUNDAMENTALS (11A) 30S/30E/30M

Course Description

Students will be introduced to electrical/electronics technology by studying DC circuit theory. Areas of study include instrumentation, measurement, component recognition, value determination, and fabrication. Students will learn Ohm's law as it relates to series, parallel, and combination circuits.

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

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

No applicable SLOs.

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 11A.2.1.1: Demonstrate the safe and appropriate identification, selection, and operation of equipment and tools.

SLO 11A.2.1.2: Demonstrate the safe and appropriate maintenance and management of equipment and tools.

SLO 11A.2.1.3: Demonstrate the use of measuring instruments to analyze electrical flow through or within specific electrical circuits. (A8.4)

- application of Ohm's Law, Joule's Law and Kirchhoff's Law of Voltage and Law of Amperage when measuring the following electrical circuits
 - series
 - parallel
 - series-parallel

- test equipment (e.g., Voltage Ohmmeter (VOM)) to measure and determine the main aspects of electrical flow within a specific circuit
 - relationships between:
 - voltage and amperage
 - resistance and amperage
 - simple electrical circuits
 - common electrical faults
 - “open circuit”
 - “short circuit”
 - “ground fault”
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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 11A.3.1.1: Correctly identify devices and materials used in DC fundamentals.

SLO 11A.3.1.2: Maintain and manage devices and materials.

SLO 11A.3.1.3: Select and install DC devices and materials according to industry standards.

Goal 4: Demonstrate an understanding of **electrical theory (fundamentals).**

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

SLO 11A.4.1.1: Describe laws of magnetism. (A7.3)

- basic principles
- left hand rules
 - conductor
 - coil
 - generator
- electro-magnetism

SLO 11A.4.1.2: Describe and demonstrate electromagnetic induction principles and applications. (A8.2)

- electromagnetism
 - Faraday’s Law
 - Lenz’s Law
- self-induction
- solenoids

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.**

No applicable SLOs.

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.**

No applicable SLOs.

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 11A.7.1.1: Test, troubleshoot, and document DC circuits.

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

GLO 8.1: Read, interpret, and communicate information.

No applicable SLOs.

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

No applicable SLOs.

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 11A.9.1.1: Demonstrate an understanding of career opportunities in electronics technology.

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 11A.10.1.1: Demonstrate an awareness of the widespread use of electricity/electronics in contemporary life.

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

SLO 11A.10.2.1: Minimize wastage of materials.

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

No applicable SLOs.

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 11A.11.1.1: Demonstrate an understanding of the requirements for ethical behaviour in school and the workplace.

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

No applicable SLOs.

Goal 12: Demonstrate employability skills.

GLO 12.1: Demonstrate fundamental employability skills.

- SLO 11A.12.1.1: Demonstrate regular and punctual attendance.
 - SLO 11A.12.1.2: Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.
 - SLO 11A.12.1.3: Demonstrate accountability by taking responsibility for their actions.
 - SLO 11A.12.1.4: Demonstrate adaptability, initiative, and effort.
 - SLO 11A.12.1.5: Demonstrate teamwork skills.
 - SLO 11A.12.1.6: Demonstrate the ability to stay on task and effectively use time in class and work environments.
 - SLO 11A.12.1.7: Demonstrate the responsible use of wireless communication devices.
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GLO 12.2: Demonstrate an awareness of cultural competence and its importance in the workplace.

- SLO 11A.12.2.1: Demonstrate an awareness of how people's culture affects their values and behaviour.
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GLO 12.3: Demonstrate an understanding of the business operation of an electrical trades facility.

- SLO 11A.12.3.1: Participate in classroom and workstation cleanup.
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GLO 12.4: Demonstrate critical thinking skills in planning, procedures, analysis, and diagnosis.

- SLO 11A.12.4.1: Demonstrate critical-thinking skills while troubleshooting an electronic project.
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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 11A.13.1.1: Demonstrate an understanding of the history, technological progression, and emerging trends in DC fundamentals.
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