

SEMICONDUCTOR TECHNICIAN

Levels 1-4

Learners on this pathway gain skills in the makeup and functioning of semiconductors, electrical theory and application, electrical tools, testing and the assembly of electrical circuits, cutting and fastening of materials and pneumatics and hydraulics. This pathway employs four levels covering 15 areas of expertise through 51 courses. It will take learners 57 hours to complete this pathway.

Level 1 provides learners with an understanding of the function of semiconductors and their manufacture, as well as the production of electricity and how electrical circuits work, including the physical laws that apply to electric current. Level 2 involves the application of electrical testing equipment, the types of splices used to make electrical connections and the tools to make them and the function and assembly of coaxial connectors. Level 3 introduces learners to the cutting tools used to thread assembly parts, the hand tools used for assembly and repair and the common fasteners used in assembly. Level 4 gives learners an overview in the use of vacuum in pneumatic systems and the theory behind hydraulics, the proper fluids and the symbols used on engineering drawings to denote hydraulic systems.

Among the objectives for this pathway, learners will be able to:

- understand the functions of a semiconductor
- list the differences between series, parallel and combination circuits
- understand the importance of the location of a crimp
- list proper cutting fluids for tapping different materials
- understand the physical laws that are used in vacuum technology

Total # of Modules: 51

Total Hours: 57



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Level 1

Semiconductor

- 1.1 Semiconductor process overview
- 1.2 Vacuum leak checking
- 1.3 Ion implantation
- 1.4 Thin films
- 1.5 Vacuum Leak Checking Gamification

Introduction to Electricity

- 1.5 Production of Electricity
- 1.6 Transmission and Distribution of Electricity
- 1.7 Uses of Electricity
- 1.8 Atomic Structure
- 1.9 Electrical Circuits
- 1.10 Electrical Current
- 1.11 Voltage
- 1.12 Electrical Power
- 1.13 Resistance
- 1.14 Ohm's Law
- 1.15 Watt's Law

Level 2

AC Electricity

- 2.1 Electromagnetic Devices

Solid State Electricity

- 2.2 Solid State Devices

Electrical Hand Tools

- 2.3 Hand Tools for Electrical Wiring

Electrical Measurement Conversion

- 2.4 Electrical Measurement and Unit Conversion

Electrical Resistance Test Equipment

- 2.5 Resistance Test Equipment
- 2.6 The Fluke® Multimeter

Crimping Terminals and Splices

- 2.7 Terminals and Splices
- 2.8 Crimping
- 2.9 Crimping a Terminal
- 2.11 Crimping a Pre-insulated Splice

Assembly of Coaxial Connectors

- 2.12 Coaxial Connectors
- 2.13 Coaxial Connector Tools
- 2.14 Coaxial Connector Assembly

Level 3

Cutting Tools

- 3.1 Countersinking Tools
- 3.2 Threads
- 3.3 Taps
- 3.4 Hand Tapping
- 3.5 Threading Dies

Hand Tools

- 3.6 Pliers and Ratchets

Fasteners

- 3.7 Torque Tools
- 3.8 Bolts, Screws, and Washers
- 3.9 Threaded Inserts

Measurement

- 3.10 Countersink Gauges

Level 4

Pneumatics

- 4.1 Vacuum Technology
- 4.2 The Properties of Gases

Hydraulics

- 4.3 Introduction to Hydraulics
- 4.4 Hydraulic Theory
- 4.5 Hydraulic Fluids
- 4.6 Hydraulic Systems
- 4.7 Hydraulic Actuators
- 4.8 Classification of Hydraulic Valves
- 4.9 Hydraulic Piping and Instrumentation
- 4.10 Hydroelectric Symbolology and Circuits