

2 Day Multimeter Course

Course Aims

To provide the delegate with the ability to:

Safely and carefully use different multimeters

Make a diverse range of accurate, detailed electrical measurements using both analogue and digital multimeters

Quickly improve electrical troubleshooting skills through a balance of theory and practical work

Gain experience of some of the more advanced multimeter functions

Quickly use multimeters to fault-finding a range of circuit problems

Duration

2 Days

(Approx. 6 hours per day)

6 x 2 hour Evening Sessions

Course Contents / Criteria

- **Discuss, explain and teach the need for multimeter skills when troubleshooting within the modern garage.**

- **Demonstrate skills of fault-finding using multimeters.**

- **Multimeters**

Includes health and safety, safe handling, care of electrical measuring equipment, typical usage, both basic and more advanced multimeter functions, analogue versus digital meters, electronic system fault-finding, correct accurate reading of analogue and digital multimeters.

- **Electrical / electronic terminology**

Includes explanation of scales, units and sub-units, methods of obtaining accuracy in meter reading, definition and explanation of Volts, Amps, Ohms and

Watts, explanation of Ohm's, Watt's and Kirchhoff's Laws, tracing and identifying open circuits, short circuits, high resistance, parasitic drains and circuit continuity testing.

- **Practical skill development — using multimeters for fault finding**

Includes fault-finding experience on a range of vehicle systems, units, components and sensors.

Apply the relevant system safety precautions when either examining or disconnecting units or parts; take suitable precautions when working on circuits; systems and components; discuss and report incidents and problems found through electrical and electronic fault finding and diagnosis; complete electrical fault finding and diagnostic tasks using multimeters; complete electrical and electronic diagnostic programs and report findings.

Freephone: 0800 783 2545

COMPACT COURSE

motor industry

Pre-requisites

- An understanding of electricity, magnetism and electromagnetism
- Ability to apply standard electrical formulae to practical situations
- Basic knowledge of the need for automotive and general purpose multimeters

Qualification Outcome

The course outcome will provide evidence for the Technical Certificate Level 3 Diploma and could be incorporated as a part of an NVQ programme, towards an APL process or CPD.

Course Theory & Practical Work

Names and functions of parts and systems under test

Sensors, components, systems and circuits.

The Purpose behind

Testing circuits and components.

Applying electrical safety.

Diagnosing fault conditions using meters.

Names and functions and basic checks

Volts drop testing.

DC and AC Volts testing.

DC and AC Amps testing.

Resistance testing.

Open circuit testing.

Parasitic drain testing.

Short circuit testing.

Circuit continuity.

System and component fault finding.

Electronic component measurement.

Causes and effects, implication

Causes of damage and injury; implication of using the incorrect source voltages; implications of incorrect testing applications; implication of not observing manufacturer's specifications.

Procedures and techniques

Safety procedures; fault finding procedures using meters for component, engine and vehicle systems; diagnostic techniques for fault finding; applicable health and safety legislation.

Theory, Rules, Principles & Laws

Definitions and explanations of units of Volt, Amp, Ohm and Watt.

Explanations of Ohm's, Watt's and Kirchhoff's laws.



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