



Electrical Principles

Aim

- Provides delegates with a sound underpinning knowledge of electrical principles (AC & DC)
- Provides foundation knowledge in electrical theory and practice that logically links to further training in Signal Engineering

Key Features

DC Electrical Theory

Basic Concepts of Electricity
Ohm's Law
Electrical Safety
Scientific Notation and Metric Prefixes
Series and Parallel Circuits
Series Parallel Combination Circuits
DC Metering Circuits

Electrical Instrumentation Signals
DC Network Analysis
Batteries and Power Systems
The Physics of Conductors and Insulators
Capacitors
Magnetism and Electromagnetism
Inductors
RC and L/R Time Constants

AC Electrical Theory

Basic AC Theory
Reactance and Impedance - Inductive
Reactance and Impedance – Capacitive
Reactance and Impedance - R, L, & C
Resonance

Mixed-Frequency AC Signals
Filters
Transformers
AC Metering Circuits

Course Outcomes

On successful completion of this course, the delegate will be able to:

- Distinguish between static and current electricity
- Use and manipulate values with Scientific Notation.
- Identify electrical conductors and insulators
- Explain the relationship among current, resistance and voltage
- Measure voltages and amperages in circuits, and calculate resistance using Ohm's law
- Explain the impedance due to inductive and capacitive reactance and their relationship to frequency.
- Explain the operation of a simple parallel and series LCR circuit as filters.

Assessment and Certification

Achievement of the Course Outcomes will be assessed by a theory assessment to demonstrate the underpinning knowledge gained.

The delegate's achievement of the Course Outcomes will be confirmed by a certificate which will be forwarded to the nominated client contact following the course.

Practical Information

Duration: 10 Days

Maximum number of delegates: 10

Location: At our Derby training centre, or on your premises

This course is produced and run by Signet Solutions.

For further information contact us:

enquiries@signet-solutions.com

www.signet-solutions.com

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Course Progressions

We offer many signalling technical courses, and it can be difficult to work out what's best for your needs. The following table will assist you.

*Development Courses in green text

These courses typically form the backbone of a career development path, and are usually taken in the order shown. *Available on an "open" basis, in which you can take individual places from our regular timetable.*

*Supplementary Courses in blue text

These courses provide supplementary knowledge about a specific technology or process. They can generally be taken on an "as needed" basis, without any particular order. *Available on a "private" basis, in which you sponsor the delivery of a full course. This works better for four or more delegates.*

This is just a quick guide – please consult our individual course specifications for more detailed information. Please ask us if you have any queries.

Signal Maintenance & Signal Installation	Signal Design	Signal Works Testing
Introduction to Signalling/ Basic Signalling 1 & 2	Basic Signalling Technology Intermediate Signalling Technology Layouts Intermediate Signalling Technology Control Tables Advanced Signaling Technology	Introduction to Signalling/ Basic 1 & 2 Mod 5 - Test Assistant Mod 3c - Verification Tester Mod 3BL - Functional Tester Mod 4 - Functional Tester Mod 2 - Principles Tester Mod 1 - Tester in Charge
SMTH - Signalling Maintenance Testing Handbook Appreciation Route Relay Interlocking - Maintenance Interlocking Design Clamp Lock Installation Clamp Lock Maintenance Cable Jointing Supplementary Back Drives + Stretcher Bars EISS Electrical Installation Skills Electrical Principles Style 63 Points Installation Style 63 Points Maintenance Westpac MK111A Maintenance + Faulting HW100 Points Maintenance EBI Track 200/T121 Track Circuits Fault Finding Techniques Mechanical Signalling	Route Relay Interlocking Route Relay Western Region E10k Circuitry Correlation Westpac MK11A - Design Location Design Project Level Crossing Design SSI Appreciation SSI Control Tables SSI Data Appreciation SSI Data Preparation Route Relay Interlocking - Mod 3BI Westpac MK11A - Testing	