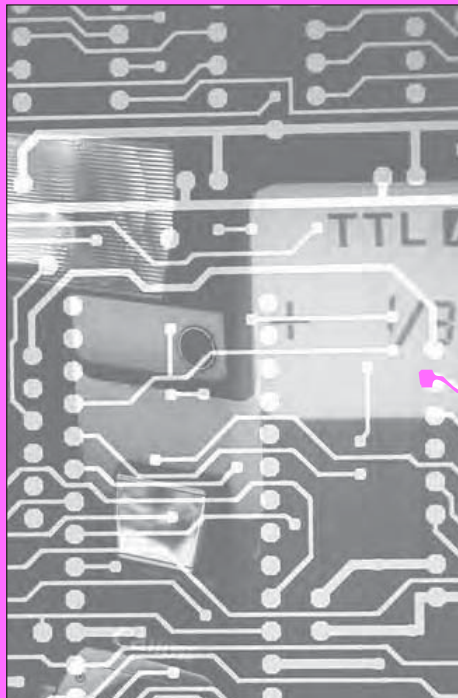

PRACTICAL INDUSTRIAL ELECTRONICS FOR ENGINEERS AND TECHNICIANS



YOU WILL LEARN HOW TO:

- Work effectively with common electric components and systems
- Troubleshoot problems (save on downtime)
- Multi-skill into electronics; to improve your employability
- Confidently carry out simple repair procedures for faults on printed circuit boards

WHO SHOULD ATTEND:

- Maintenance technicians, electricians, foremen and engineers
 - Mechanical and chemical engineers, operators and personnel who need electronics knowledge
 - All engineering, operations and management personnel who are directly or indirectly involved with electronic controls
 - Those involved with the installing, programming, maintaining and purchasing of electronic control equipment
 - Those involved with sales and installation of electronic products
 - Anyone whose work requires the use of electronic equipment
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The Workshop

Industrial electronics has become an integral part of our businesses. A working knowledge of electronics has now become a prerequisite for efficiency in the work place.

This two-day workshop will 'demystify' the world of electronics to you and equip you to understand, identify and confidently troubleshoot electronic problems. You will gain the vital knowledge that you need to: multi-skill, reduce down-time, save your company money, and secure your value in the workplace. You will learn the latest trends and techniques in the fast-moving field of industrial electronics.

Pre-requisites

This workshop is not designed for experienced electronic engineers and technicians.

Workshop Objectives

This practical, hands-on workshop will introduce industrial electronics to anyone who needs to understand electronics and confidently troubleshoot electronic problems in their work place.

You will gain the most up-to-date knowledge to:

- recognise and efficiently troubleshoot common electronic component and circuit problems
- understand the construction and operation of common electronic components
- understand common electronic terminology
- effectively apply the principles of analog meters, digital meters and oscilloscopes
- identify electronic component symbols
- identify components and read their values
- implement procedures for the testing of electronic components
- confidently carry out simple repair procedures for the correction of faults on printed circuit boards
- multi-skill with colleagues in your industry

Practical Sessions

There are a total of 10 practical hands on sessions, which aim to give you the confidence and experience you need to work with and troubleshoot electronic equipment.

These practical sessions are:

- Discrete components
- Circuit laws
- Use of test equipment
- Industrial practices
- Troubleshooting

The Program

INTRODUCTION

BASIC CONCEPTS

- Atomic structure
- Insulators, conductors and semiconductors
- Current, voltage, resistance, power
- Direct and alternating current
- Units and abbreviations

DISCRETE COMPONENTS

- Resistors, inductors and capacitors
- Transformers and bridge rectifiers
- JFETS and MOSFETS
- SCRS, DIACS and TRIACS
- LEDs

Practical session Discrete components

CIRCUIT LAWS

- Ohm's Law
 - Kirchhoff's Voltage Law
 - Kirchhoff's Current Law
- Practical session Circuit laws

AMPLIFIERS

- Small signal amplifiers
- Power amplifiers
- Amplifier frequency response
- Amplifier applications

OPERATIONAL AMPLIFIERS

- Op-amp parameters
- Negative and positive feedback
- Op-amp frequency response, stability and compensation
- Basic op-amp circuits
- Power supplies

USING TEST EQUIPMENT

- Current measurement
 - Voltage measurement
 - Analogue meters
 - Digital meters
 - Oscilloscopes
- Practical session Using test equipment

INDUSTRIAL PRACTICES

- Soldering aids
 - Printed circuit boards preparation
 - Component preparation
 - Constructing a soldered joint
 - Common defects in soldered joints
 - Desoldering
 - Safety in the work area
- Practical session Industrial practices

TROUBLESHOOTING

- Open circuits
 - Short circuits
 - Testing diodes, DIACS and TRIACS
 - Testing BJTS, JFETS and MOSFETS
 - Testing digital and linear components
 - Components out of tolerance
 - Troubleshooting, using circuit laws
- Practical session Troubleshooting