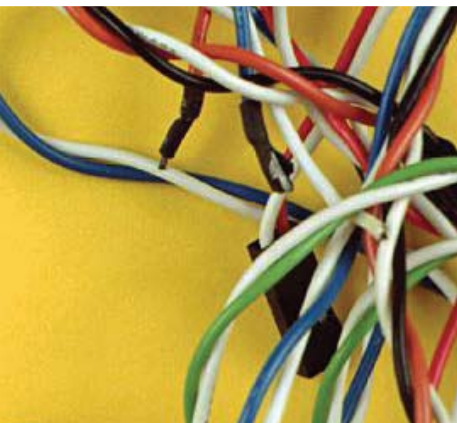




SHORT COURSE IN

## AS 3000: 2007 ELECTRICAL WIRING RULES

UPDATE AND REFRESHER  
(STANDARD AS / NZS 3000)



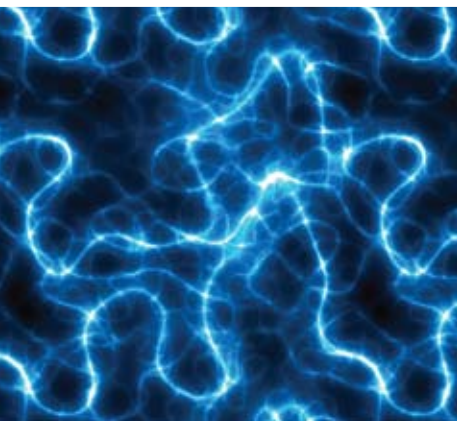
6 MODULES OVER 6 WEEKS

COMMENCING ON: 27 JUNE 2011

Keep you and your company one step ahead with this comprehensive overview of AS 3000: 2007 Electrical Wiring Rules

Live, interactive webinars - learn from industry experts with hands-on experience

Bring yourself up to speed in the latest trends and technologies



### WHAT YOU WILL LEARN

- How to apply the requirements of the AS/NZS 3000 Wiring Rules
- Understand these requirements and apply them in your day-to-day work
- Updates and changes to the AS/NZS 3000 Wiring Rules
- Importance of fulfilling the requirements for safe use of electrical equipment and systems
- Understand earthing and its importance in safety
- Simple methods of calculating to check the adequacy of conductors and protective earthing components to ensure safe operation
- How to perform periodic checks and verification measures to be carried out in an electrical installation as mandated by the standard



**ENROL NOW:** Fax the enrolment form to us,  
or email [enquiries@eit.edu.au](mailto:enquiries@eit.edu.au)

# BENEFITS OF LIVE E-LEARNING

- Attend lessons in an online classroom with your instructor and fellow students
- Upgrade your skills and refresh your knowledge without having to take valuable time away from work
- Receive information and materials in small, easy to digest sections
- Learn while you travel - all you need is an Internet connection
- Have constant support from your course instructor and coordinator for the duration of the course
- Interact and network with participants from around the globe and gain valuable insight into international practice
- Learn from international industry experts, based around the globe
- Live interactive webinars, not just a 'book on the web'
- Receive a certificate of completion for CPD purposes

## PRESENTATION FORMAT

The short course program features real-world applications and uses a multi-pronged approach involving self-study, interactive on-line webinars and homework assignments with a mentor on call. The course consists of 6 modules, over a period of 6 weeks.

Some modules may involve a practical component or group activity. For each module there will be initial readings, on-line multiple choice quizzes for modules one to five and a final assignment. Participants will have ongoing support from their instructor and course coordinator.

Course reading material will be delivered in electronic (PDF) format in advance of on-line presentations. Presentations and group discussions will be conducted in 60 minute sessions using a live interactive software system. Assignments will be submitted electronically and wherever possible, practical exercises will be conducted using simulation software and remote labs.

## LIVE WEBINARS

During the program you will participate in 6 live 60 minute interactive sessions with the instructor and other participants from around the world. We take student availability into consideration wherever possible before schedule webinar times. Contact us for details of webinar session scheduling. All you need to participate is an adequate Internet connection, speakers and a microphone. The software package and setup details will be sent to you prior to the course.

## PRESENTED BY

### ROGER ROYAL

Dip EE (C&G) Grad.Dip Rob. Senior Engineer



Roger has built up a solid 40 years of hard-won experience in the electrical power industry and this is apparent in his instructing. He has a passion for teaching and has achieved outstanding results over the past twelve years with his courses on circuit breakers & switchgear, earthing, bonding, lightning, surge protection, power systems protection and transformers throughout the world.

He commenced his career in the design and construction of transformers, power cables and switchgear with Alstom (GEC); this work included a significant degree of R&D. Roger has since worked for numerous blue-chip companies in the classical design of power systems, transformers and switchgear. More recently, he has spent a considerable time in maintenance operations of electrical engineering assets.

Roger has carefully prepared for the presentation of this course, to ensure that you will walk away with the skills and know-how in working with the AS 3000: 2007 Standards which you can immediately apply to your work. He is looking forward to meeting all participants and being able to pass on his experience and knowledge.

## 6 MODULES OVER 6 WEEKS

### OVERVIEW

This course aims to familiarise you with the requirements laid down in the standard AS/NZS 3000, commonly known as the Australia - New Zealand Wiring Rules. For those installations covered in the scope of this standard, its provisions are mandatory and must be followed. Any engineer involved in planning and design of electrical systems, their installation or maintenance must have a clear idea about the various requirements contained in the standard.

The primary purpose of this standard, like many of its various other equivalent national standards, is to ensure the safety of personnel against the dangers arising from the use and handling of electrical equipment and appliances. The introductory modules of this course outline the basic principles that should be understood for a better appreciation of the standard. These include modules which illustrate the calculation for the power demand of a system and the computation of earth fault currents as discussed in the appendices of the standard. These are informative in nature and are very important in making an electrical system safe for operation. The actual provisions of the standard are then discussed in detail in the subsequent modules.

### WHO THIS COURSE WILL BENEFIT MOST

- Instrumentation and Control Engineers
- Consulting Engineers
- Electrical Engineers
- Project Engineers
- Maintenance Engineers
- Electrical Contractors
- Safety Professionals
- Electricians
- Electrical Inspectors
- Power System Protection and Control Engineers
- Building Service Designers
- Data Systems Planners and Managers
- Electrical and Instrumentation Technicians
- Electrical Design Consultants
- Electrical Supervisors

### INCLUDES 2 FREE REFERENCE MANUALS

VALUED AT OVER US\$200

YOU WILL RECEIVE 2 OF OUR UP-TO-DATE TECHNICAL E-BOOKS TO ADD TO YOUR LIBRARY.

- Practical Electrical Safety Techniques for Industry
- Practical Medium and High Voltage Testing of Electrical Equipment for Engineers and Technicians



Over 700 pages of tables, charts, figures and handy hints

Received upon completion.

All materials required for the course will be provided electronically, in smaller, easy-to-read sections.

*Please Note: e-Books are available in hard copy at 50% of the recommended retail price. Contact us for pricing details.*

# COURSE OUTLINE - INTERACTIVE WEB CONFERENCE

## MODULE 1:

### INTRODUCTION AND OVERVIEW

- Brief scope and contents of Australian Wiring Rules (AS/NZS 3000)
- Selection and installation of electrical equipment and safety considerations
- Selection and installation of wiring systems
- Earthing and its importance in safety
- Testing and verification

### INSULATION OF ELECTRICAL SYSTEMS AND ITS ROLE IN SAFETY

- Functions of electrical insulation
- Air as an insulator
- Solid and liquid dielectrics
- Insulation class and temperature ratings
- Role of electrical protection
- Calculating the demand of electrical systems for proper conductor sizing (as per AS/NZS 3000 Appendix - C)

*On-line Quiz*

## MODULE 2:

### EARTHING OF ELECTRICAL SYSTEMS

- The need for earthing of electrical systems
- At the source (system earthing)
- At the load (protective earthing)
- Methods adopted for system earthing
- Protective conductor
- Equipotential bonding

### EARTH FAULT DETECTION AND PROTECTION

- Earth fault sensing methods
- Calculation of earth fault current
- Earth fault loop impedance
- Limits of LV feeder lengths for proper earth fault detection (as per AS/NZS 3000 Appendix - B)

*On-line Quiz*

## MODULE 3:

### AS/NZS 3000 STANDARD - SCOPE AND DEFINITIONS

- Definitions
- Protection for safety
- Design of an electrical installation
- Selection of electrical equipment
- Installation of electrical equipment

### SELECTION AND INSTALLATION OF SWITCHGEAR AND CONTROLGEAR

- Devices for protection against indirect contact
- Devices for protection against overcurrent
- Protection against earth leakage current

*On-line Quiz*

## HARDWARE AND SOFTWARE REQUIREMENTS

All you need to participate is an adequate Internet connection, PC, speakers and a microphone. The software package and setup details will be sent to you prior to the course.

### Wiring Standards AS / NZ 3000

You will need to have a copy of the AS/NZS 3000:2007 Standards.

If you do not currently have a copy we can arrange an electronic copy for you, please see the registration form for details on costs.

## MODULE 4:

### SELECTION AND INSTALLATION OF WIRING SYSTEMS - PART 1

- Types of wiring systems
- Current-carrying capacity
- Sizing of conductors
- Voltage drop considerations in sizing
- Installation

### SELECTION AND INSTALLATION OF WIRING SYSTEMS - PART 2

- Enclosure of cables
- Aerial wiring systems
- Busbar trunking systems and rising mains
- Earth sheath return system

*On-line Quiz*

## MODULE 5:

### GENERAL REQUIREMENTS OF INSTALLATION

- Electrical equipment requiring protection against injury from mechanical movement
- Protection against explosion
- Connection of electrical equipment

### REQUIREMENTS FOR EARTHING IN ELECTRICAL INSTALLATIONS

- Earthing arrangements
- Multiple Earthed Neutral (MEN) system
- Equipment earthing and equipotential bonding

*On-line Quiz*

## MODULE 6:

### TESTING AND VERIFICATION REQUIREMENTS OF THE STANDARD

- Visual inspection
- Testing

### REQUIREMENTS FOR SPECIAL ELECTRICAL INSTALLATIONS OR LOCATIONS

- Locations containing baths, showers or other fixed water containers
- Extra-low voltage electrical installations
- High voltage electrical installations
- Hazardous areas
- Emergency areas

*Final Assignment*

## ON-SITE TRAINING

We can provide our training at the venue of your choice. On-site training can be customised and by bringing the trainer to site the dates can be set to suit you!

"The Customer is Always Right" – so tell us what you need and we will design a training solution at your own site.

For a FREE detailed proposal please contact Kevin Baker via e-mail: [training@idc-online.com](mailto:training@idc-online.com)

## ENTRANCE REQUIREMENTS

A working knowledge of basic electrical engineering principles is required. Experience in planning, installation and maintenance of electrical equipment and systems will enable the course to be placed in context. If you have no electrical background, you will struggle with this course. Contact us for bridging materials.

## ADDITIONAL READING

### MODULE 1:

- Evolution of electrical distribution systems
- Precautions for special locations
- Current limits of conductors based on insulation

### MODULE 2:

- Shock hazard by direct and indirect contact
- Avoiding direct and indirect contact hazards

### MODULE 3:

- Alterations, additions and repairs alternative arrangements
- Inspection and testing
- Protection against overvoltage
- Protection against undervoltage
- Devices for isolation and switching
- Switchboards

### MODULE 4:

- External influences
- Electrical connections
- Identification of wires and cables
- Underground wiring systems
- Cables supported by a catenary
- Emergency systems

### MODULE 5:

- Protection against thermal effects
- Installation requirements of transformers, capacitors, etc.
- Alternative and emergency power supply systems
- Earthing conductors
- Earthing system components
- Protection by electrical separation
- Earthing requirements for other (nonelectrical) systems

### MODULE 6:

- Swimming pools, paddling pools, and spa pools or tubs
- Locations containing sauna heaters
- Refrigeration rooms
- Locations where general hosing down operations are carried out
- Fountains and water features

## CERTIFICATION

Participants completing all the assignments, and achieving 60% or more for their final mark, will receive the Engineering Institute of Technology Certificate in AS 3000: 2007 Electrical Wiring Rules - Update and Refresher (Standard AS / NZS 3000)



# ENGINEERING INSTITUTE OF TECHNOLOGY ACCREDITATION STATUS

The Engineering Institute of Technology (EIT) is an institute for higher learning. It has emerged from its founding organisation, IDC Technologies, which is an international provider of practical, technical training. Since its conception in 1991, three hundred thousand engineers, technicians and technologists have been trained globally.

The EIT has received recognition, endorsement and/or accreditation (varies by course and location) from authorising bodies based around the world. These include:

**IEEE** - the world's largest professional association advancing innovation and technological excellence. The EIT is an IEEE Continuing Education Provider.

**The Training Accreditation Council in Australia** - The national leader in the strategic management of the recognition and quality assurance of training.

**The Institute of Measurement and Control** - Britain's foremost professional body for the Automation Industry.

**The Project Management Institute** - More than 265,000 members in over 170 countries, provides recognition and credit for continuing education units (CEUs) provided for these courses through our sister company, IDC Technologies.

**Engineers Australia** - The national peak body for all engineering disciplines. It represents 80,000 members. EIT courses are recognised for CPD purposes.

**Engineers Ireland** - With over 24,000 members, Engineers Ireland is the voice of the engineering profession in Ireland. The EIT is an Engineers Ireland CPD Registered Training Provider.

**South Africa** - The EIT has obtained validation for CPD Points from the SAIMechE (South African Mechanical Institute), COET (Chamber of Engineering Technology) and SAIEE (South African Institute of Electrical Engineers), who are Voluntary Associations recognised by ECSA (Engineering Council of South Africa). To view our list of validated workshops, visit ECSA's website [www.ecsa.co.za](http://www.ecsa.co.za) and refer to the CPD Activities.

**IPENZ** - The Institution of Professional Engineers New Zealand (IPENZ) is the professional body which represents professional engineers from all disciplines in New Zealand.



## ENROLMENT FORM

### Short Course in AS 3000: 2007 Electrical Wiring Rules

Commencing on: 27 June 2011

#### 1. PARTICIPANT DETAILS

CONTACT: \_\_\_\_\_

COMPANY NAME: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

SUBURB: \_\_\_\_\_ STATE: \_\_\_\_\_ POST CODE: \_\_\_\_\_

PHONE: ( ) \_\_\_\_\_ FAX: ( ) \_\_\_\_\_

E-MAIL: \_\_\_\_\_

PARTICIPANT NAME: MR/MS: \_\_\_\_\_ JOB TITLE: \_\_\_\_\_

AREAS OF INTEREST (please tick)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Data Communications & Networking              | <input type="checkbox"/> Electrical             | <input type="checkbox"/> Electronics                    |
| <input type="checkbox"/> Instrumentation, Automation & Process Control | <input type="checkbox"/> Information Technology | <input type="checkbox"/> Project & Financial Management |
| <input type="checkbox"/> Mechanical Engineering                        | <input type="checkbox"/> Chemical Engineering   | <input type="checkbox"/> Civil Engineering              |

Should you have more people interested in participating in this course, please contact us on 1300 138 522 or e-mail: [enquiries@eit.edu.au](mailto:enquiries@eit.edu.au)

#### 2. PAYMENT DETAILS

PLEASE NOTE: Prices shown are inclusive of GST

**Full payment is required prior to the commencement of the course.**

YES, I WOULD LIKE TO ATTEND THIS COURSE: AUD\$940 x \_\_\_\_\_ delegates = AUD\$ \_\_\_\_\_

TOTAL DUE = AUD\$ \_\_\_\_\_

I wish to pay by:  CHEQUE, made payable to IDC Technologies

COMPANY ORDER NUMBER: \_\_\_\_\_

Please charge my:  MASTERCARD  VISA

CARDHOLDER'S NAME: \_\_\_\_\_ CARDHOLDER'S SIGNATURE: \_\_\_\_\_ EXPIRY DATE: / \_\_\_\_\_

On the reverse of your card, above the signature, is a 7 digit security number. In order to authorise your card transaction, we require the last 3 digits:    If the Cardholder's address is not the same as shown above please tick this box:

#### 3. ON-SITE TRAINING & CONSULTATION

YES, I would like to find out more about on-site training and consultation services:

- Short Course in AS 3000:2007 Electrical Wiring Rules
- Other training options  Consultancy Services

**BOOKING CODE: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z**

## ABOUT THE ENGINEERING INSTITUTE OF TECHNOLOGY (EIT)

The key objective of the Engineering Institute of Technology (EIT) is to provide an outstanding practical engineering and technology education. The finest engineering lecturers and instructors, with extensive real engineering experience in industry, are drawn from around the world. The learning is gained through synchronous, online (e-learning) technologies.

The EIT offers certificates and diplomas in a growing array of engineering fields.

Many (perhaps, most) engineering faculties at universities and colleges experience a significant challenge delivering the course-work affordably and with excellence. The EIT achieves this using online based education - economical class sizes are attainable, international experts are engaged to instruct and remote laboratories and simulation software are employed.

The EIT is a sister company of the well known and reputable engineering training organisation, IDC Technologies. IDC has been operating for over 20 years, from offices throughout the world, delivering practical short courses to well over 300,000 engineers and technicians.

## CERTIFICATE COURSE DETAILS

- The course fees are per participant and include 2 reference manuals, 6 webinars, assignments and ongoing support.
- Full payment is required prior to the commencement of the course.

### CANCELLATION

A fee of 20% will apply for written cancellations received 7-14 days prior to the commencement of the course. Cancellations received less than 7 days prior to the course are not refundable however substitutes are welcome.

### CONFIRMATION

Full confirmation details and course instructions will be sent to you upon receipt of booking.

### PLEASE NOTE

The Engineering Institute of Technology has no affiliation with suppliers or manufacturers and therefore presents a completely unbiased factual view of the industry.

### PRIVACY INFORMATION

If your address details are incorrect, or you wish to remove your name from our mailing list, please contact us by phone, fax or e-mail (see below). At times we make use of lists that cannot be crosschecked against our own database and you may receive a duplicate. If so, please pass this on to an interested colleague.

### ENQUIRIES

For further information, please phone 1300 138 522.

## HOW TO ENROL

**By Fax:** 1300 138 533

**By Mail:**

Engineering Institute of Technology  
PO Box 1093,  
West Perth WA 6872

**By E-mail:** [enquiries@eit.edu.au](mailto:enquiries@eit.edu.au)

**Via our Web Site:** [www.eit.edu.au](http://www.eit.edu.au)

ABN 78 003 263 189