



# *INDUSTRIAL ELECTRONIC REPAIR*

*FOR INTERMEDIATE  
LEVEL ONLY*

## *LEVEL 2*



# *DIFFICULTY LEVELS*

## **BEGINNER**

**A BEGINNER** in the electronics field, is considered one whom may have a small knowledge of electricity or may know nothing at all. Such individual would need to learn about electricity, circuitry, how components function in an electrical circuit, and so on to advance in this field.

Although the **BEGINNER INFORMATION IS EASY TO OBTAIN**, a fundamental and proper understanding of them will go a long way in understanding more complicated topics later on in more advanced courses.

## **INTERMEDIATE**

**THE INTERMEDIATE LEVEL** in electronics engineering is considered to be the level of an individual whom has at least a diploma in electrical engineering, or has been repairing or building electronic circuits as a hobby.

At this level, one would know about the function of components and how to build different smaller scale circuits with them. In the intermediate level, electronic topics become wider and slightly more difficult to understand.

Therefore, **BUILDING THE RELEVANT CIRCUIT** of every topic is crucial to a deep understanding of higher level discussions and problems later on.

## **ADVANCED**

**THE ADVANCED LEVEL** in electronic engineering field belongs to individuals whom have finished their bachelors or masters in electronic engineering and have finished quite a few projects in this field.

**SUCH ENGINEERS** are capable of designing and repairing high-level electronic systems and have no problem tackling different types of electronic circuits. They can learn the methods of repair very quickly and benefit the most from our courses.

As a result of their advanced level of knowledge, it helps to save time when explaining different methods of repair and advanced circuitry.

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# *INTRODUCTION*

This course will teach an electronic technician about advanced methods of repair & equipment in general. Troubleshooting in depth will be discussed along each topic (**Analog and Digital Circuitry**). Through experiments, they will be experiencing the behavior of each and every component in detail to be able to troubleshoot '**without a schematic diagram**' and by only '**observing the damaged circuit's behavior**'. The participants will gain a good practical knowledge of SMT soldering, SMT de-soldering & maintaining SMT PCB boards with minimum risks. Upon completion of the Level 2 course, they will be able to do repair on PCB tracks as well.

# INTRODUCTION

## General Safety Precaution in Electrical Works:

- Safety Precautions.
- Safety in Handling Devices / Components.
- Dangers of Electric Shocks

## Complete Oscilloscope Tutorial:

- The Purpose of an Oscilloscope.
- Quick Setup.
- Other Oscilloscope Controls.
- Troubleshooting with Oscilloscope.

## Introduction to Power Components & Their Testing Methods:

- Field-Effect Transistor.
- Thyristors.
- Varistors and Their Testing.
- Loadcells and Their Testing.
- Current Transformer and Their Testing.

## RF (Radio Frequency), Modulation Methods, Transmitters & Receivers:

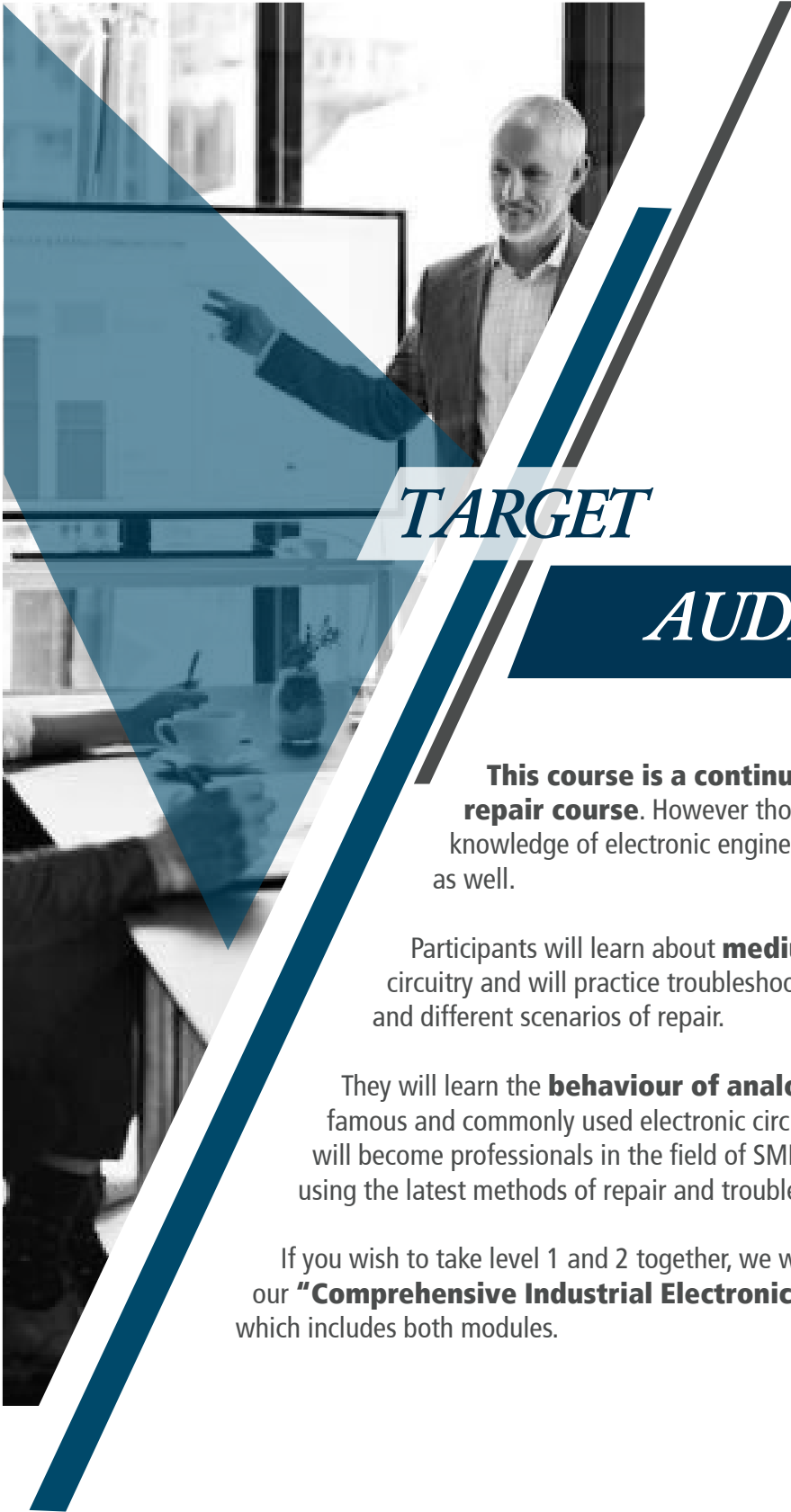
- Introductions to Radio Frequency Concepts, Modulation Methods.
- Basic Circuitry of an Electromagnetic Transmitter.
- Circuitry of an Electromagnetic Receiver.

## Techniques And Safety of SMT Soldering And Desoldering:

- Why SMT Soldering (Surface Mounting Technology)?
- Methods of Hand-soldering SMD Components.
- Methods of Hand Desoldering SMD Components.
- Cleaning and Maintaining Your PCBs.

## Studying Components and ICs in Circuits:

- Experiments with Various Components (i.e. Regulators, Op-amps, Transistors & etc.).
- Experiments with Analogue ICs.
- Experiments with Digital ICs.



## TARGET

## AUDIENCE

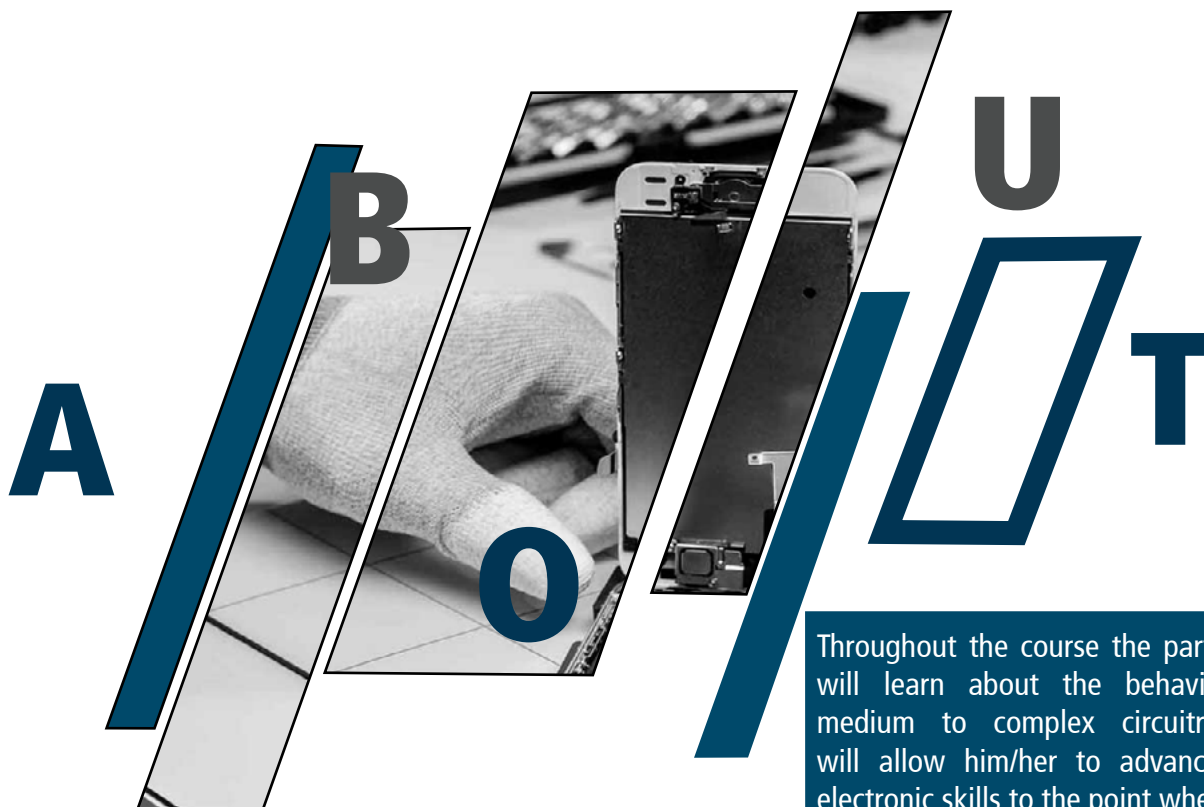
**This course is a continuation of our Level 1 repair course.** However those whom have a good basic knowledge of electronic engineering are encourage to apply as well.

Participants will learn about **medium to advanced** electronic circuitry and will practice troubleshooting machine control PCB and different scenarios of repair.

They will learn the **behaviour of analogue and logic chips**, famous and commonly used electronic circuitry and components. They will become professionals in the field of SMD soldering and de-soldering using the latest methods of repair and troubleshooting.

If you wish to take level 1 and 2 together, we would recommend you to take our **"Comprehensive Industrial Electronic Repair Course"** instead which includes both modules.

## *ABOUT REPAIR COURSE*



This course has been designed in collaboration with many repairs engineers including our own. Over 10 years of experience of our repairs engineers make up for a sound course with exceptionally valuable repair methods and data you won't find anywhere else.

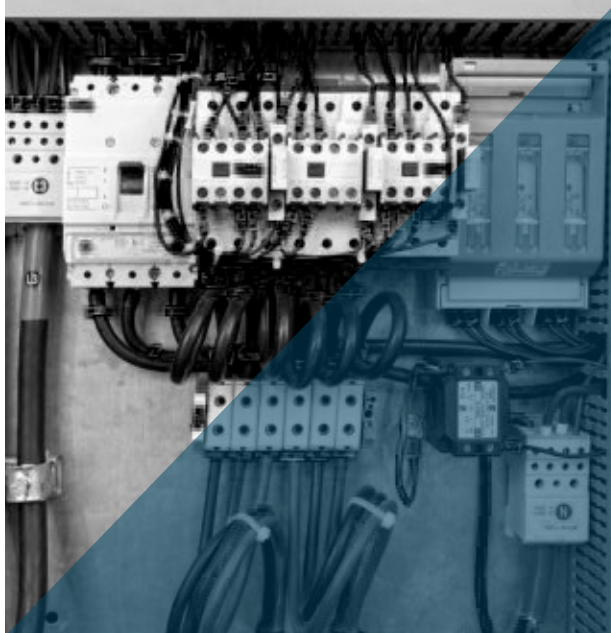
Knowing the functionality of components in different designs is only half of the deal in a successful repair. Specific repair methods and weak points of different circuits will save you hours if not days of confusion. It is quite rare to find a course on repairs since most of the repair centers would like to keep their trade secrets to themselves. Fictron however believes in freedom of information and wouldn't mind sharing them with your repair personnel for the benefit of repair industry in general.

Throughout the course the participant will learn about the behaviour of medium to complex circuitry. This will allow him/her to advance their electronic skills to the point where they can guess what the schematic is inside their head and pin-point the faulty components without too much testing.

We believe that for a successful engineer in the fields of electronics, familiarity and experience can come handier than pure academic information at numerous occasions in every repair job. We often face graduated students who have a hard time repairing circuits because of lack of experience and practical information on repairs since their educational background has taught them more about design than repair. And that is exactly why we have put together these repair courses. Some of the subjects may have the same name as the topics discussed for a typical electronics engineer. The context however, is absolutely different than those discussed in an academic institution. In these courses, everything that is said, is done.



# *ABOUT REPAIR COURSE*



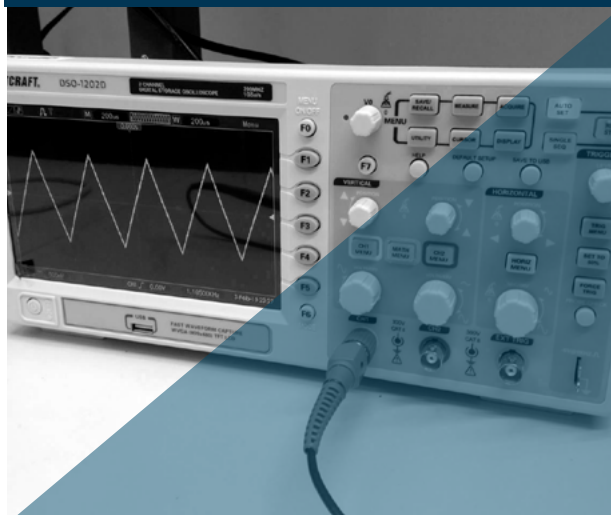
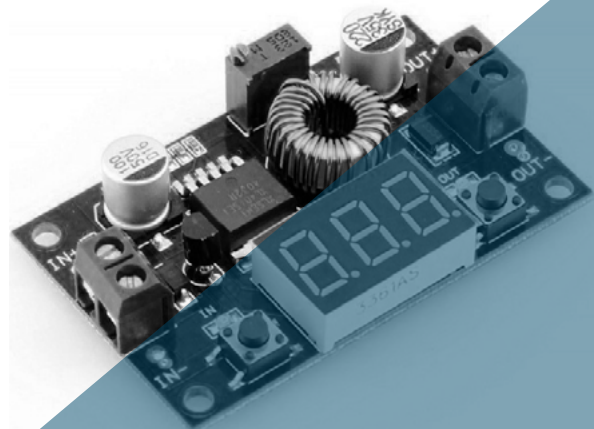
## **General Safety Precaution in Electrical Works:**

Considering how sensitive today's electronic circuits are, you could successfully repair a circuit board and spoil it at the same time by ignoring electro-static safety rules.

Also, there're many cases of electric shocks when repairing devices that haven't been operating for months as there's always some electricity stored in some devices. In this section safety of the boards and the repairs engineer are fully discussed to avoid endangering either the engineer or the machine under repair.

## **Introduction to Power Components and Their Testing Methods:**

Since this course is aimed at "Industrial Electronic Repairs", it includes testing the full range of power modules and high voltage components which are widely used in Industrial Electronics.

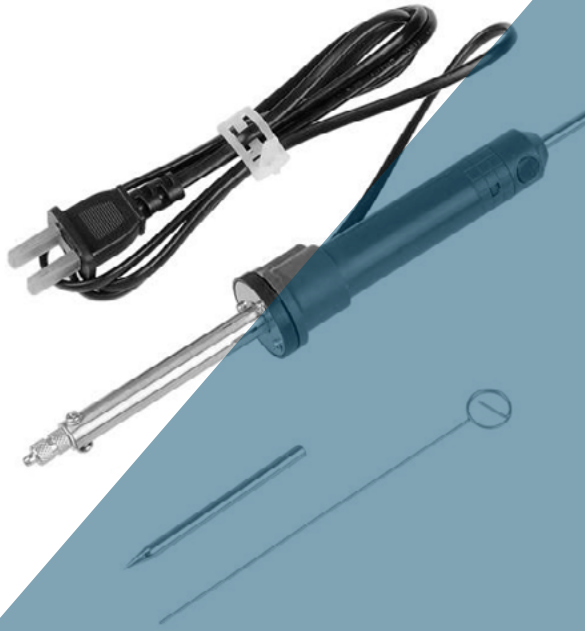


## **Complete Oscilloscope Tutorial:**

It's almost impossible to repair today's complicated circuit boards without the help of essential devices such as an oscilloscope. It's a device many repairs technicians ignore without realizing the time-saving and in-depth repair benefits it could provide. We'll make sure you can make good use of your oscilloscope in your lab regardless of its model and options as long as it's calibrated.



# ABOUT REPAIR COURSE



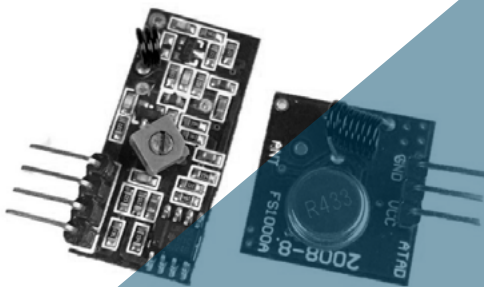
## Techniques and Safety of SMT Soldering and Desoldering:

Even the best repairs engineer with the sharpest repair skills won't be able to repair today's advanced circuit boards if s/he doesn't know how to solder and de-solder SMD components.

In many cases a re-soldering of ICs in a PCB will solve the issues created by vibration, dust and etc. And in many other cases, a healthy expensive IC can be easily spoiled if it's be soldered at the wrong temperature and exceed a specific amount of seconds. That is why Solder and De-soldering SMD components is a truly state of the art skill that every electronic repairs person must acquire.

## Studying Components and ICs in Circuits:

Manufacturers would like to reduce the cost of their production but using every component in the best possible way. Although this is very good for customers, it can increase the complexity of circuit designs. A repairs person must know how components are used in different circuits to be able to troubleshoot a broken circuit board.



## RF (Radio Frequency), Modulation Methods, Transmitters & Receivers:

Wireless Technologies are commonly used in PLC systems for cost saving benefits in remote control applications and knowing about modular transmitters and their function will greatly enhance an engineer's repair skills.

# TRAINING SCHEDULE

## NOTES

1. There are 2 quizzes taken from the participant each day. One is before lunch and the other before the ending of the training day.
2. A day of absence will require the participant to join the next course for that particular day. Same applies to half day of absence.
3. The last 15 minutes of the training session (1645 - 1700) is for reviewing what been taught.
4. There is a 15 minutes break in between each class and the lunch time if from 1230 - 1330.
5. The training course book, quizzes, components and tools are provided by FICTRON.
6. Every circuit that is taught is practiced and built to ensure a full understanding of subject matter.

## ITINERARY / EVENT

DAY 1 - 3

0915 - 1045 (1 HOUR 30 MINS)  
LESSON

1045 - 1100 (15 MINS)  
BREAKTIME

1100 - 1230 (1 HOUR 30 MINS)  
LESSON  
QUIZ

1230 - 1330 (1 HOUR)  
LUNCH

1330 - 1500 (1 HOUR 30 MINS)  
LESSON

1500 - 1515 (15 MINS)  
BREAKTIME

1515 - 1645 (1 HOUR 30 MINS)  
LESSON  
QUIZ

1645 - 1700 (15 MINS)  
LESSON REVIEW

## ITEMS

<b>LESSON</b>	: 4 LESSONS A DAY
<b>DURATION</b>	: 3 DAYS
<b>QUIZ TIME</b>	: 2 TIMES A DAY (TOTAL OF 6 QUIZZES FOR 3 DAYS)
<b>LUNCH TIME</b>	: 1230 - 1330 (1 HOUR)





## *ABOUT FICTRON*

**Fictron Industrial Supplies** has had extensive experience in repairing industrial electronic **Motor Drives, PLC systems, Servo Systems** as well as **Human Machine Interfaces**.

**OUR ENGINEERS** are trained in Germany and we are the authorized repair center for **KEB Automation KG**. As an industrial solution provider, we believe in an open market whereby the repair information is shared for the greater good of industrial electronics and ease of operation for local factories.

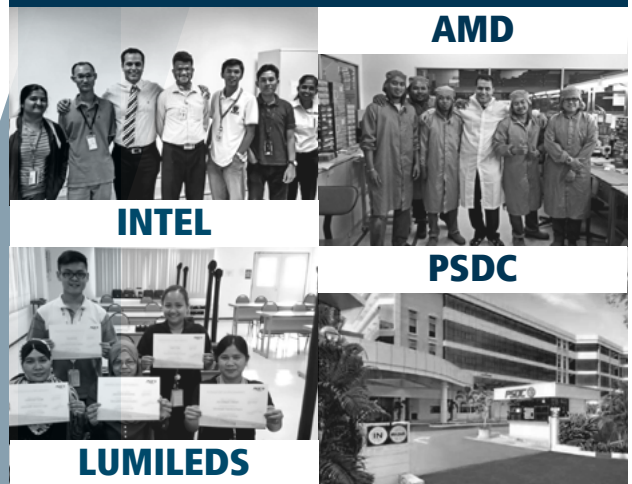
## FICTRON REPAIR EXPERTISE

- ON-SITE
- IN-HOUSE
- RUSH REPAIR
- 10+ YEARS EXPERIENCE
- KEB GMBH CERTIFIED
- PARAMETER SETTING
- PLC PROJECTS AND BACK UP
- & MANY MORE.



## ABOUT FICTRON

## OUR CLIENTS



## AWARDS

- **16th** Asia Pacific International Honesty Enterprise - Keris Award
- **15th** Asia Pacific International Entrepreneur Excellence Award
- **12th** Top Global Brand Leadership Excellence Award
- **World** Confederation of Businesses - Worldcob-Biz 2019 Award



A black and white photograph showing a group of people in a training session. They are gathered around a table, looking at something on the table. The photo is tilted and partially obscured by a blue graphic element.

## *ABOUT IRS*

**IRS Training Sdn Bhd**, est. in 1997 has been a pioneer in delivering **Creativity and Competency** based trainings throughout Malaysia and Asia Region. Consistently known for delivering excellent creativity training programs such as **Edward De Bono's Six Thinking Hats & Lateral Thinking**, is also known for **LEGO Serious Play and Game Storming**. Additionally, IRS is also currently moving into innovative and creativity application on team namely **Four Sight Toolset and Mindset certification**. Locally, IRS Training is famous for their **HRDF Train the Trainer, Evaluation on Effectiveness of Training, Master Trainer and Training Needs Analysis** programmes.

**IRS** believes that in today's era of **VUCA**, there's no other way but to reinvent. We need to engage, embrace, and adopt new ways of learning and working with the latest and emerging technologies. Digital transformation allows us to achieve sustainable advantage we can have over others. As a testament for its effort in consistently providing and delivering quality training programmes, **IRS won SME Awards 2009 for Best Brand in Services Management and Minister of Human Resource Award 2012**.

# ABOUT IRS

## QUALIFICATION

Registered Training Provider with Pembangunan Sumber Manusia Berhad (PSMB) since 1997 - No.0281 ClassA;

- Approved HRDF TTT, EET, Master Trainer & TNA Consultant for PSMB
- Approved Training Partner for Certification Courses
- Approved Training Partner for SMETAP & PKS programmes

Registered as an Accredited Centre (Pusat Bertauliah) under JPK / DSD (L02279)

Registered with Ministry of Finance "Pendaftaran Kontraktor" – No.357 - 0002287070

Registered with Perbadanan Produktiviti Malaysia (MPC) – 42L-PLPS

Authorised Representative for FOURSIGHT Certification Tools of Thinking and Innovation

Facilitator for LEGO Serious Play Training Methodology

Authorised Representative of Edward de Bono's Thinking Systems™

Authorised Provider for Australia Certification Courses (i.e. Certificate IV, Diploma and Advanced Diploma Programmes) accredited by ASQA (Australia Skills Quality Authority).

A Centre for RPL (Recognition of Prior Learning)

## TRAINING PROGRAMME

- **FOURSIGHT** Certification
- **De Bono** Creativity Programs
- **Lego Serious Play** Training Methodology
- **Game Storming** Training Methodology
- IRS Public Course Series – IR4.0
- **HRDF** Train The Trainer
- **HRDF Evaluation On Effectiveness** Of Training (EET)

## AWARDS

- WINNER of **HUMAN RESOURCE MINISTER AWARD 2012**
- AWARDED The **Brand Laureate SMEs Chapter Awards 2009**
- AWARDED the **CERTIFICATE OF APPRECIATION** for Human Resources Development 2009/2007
- One of the active and recognised provider in **Edward de Bono's Thinking Systems™** and the first in Malaysia

**The Brand Laureate Best Personality Award** in 2006 for Dr. Edward De Bono



# *THE INSTRUCTOR*

## MR AMIN IZADY SADR

Who is an electronics prodigy from Iran with extensive hands-on design and research experience in the **Electronics** field. He started building his first electronics circuit when he was 7 years old.

He is extremely well-versed with years of experience in **PCB Design with Altium, electrical wiring, programming with PIC Basic Pro & Bascom, service and repair of home appliances, car audios, power supplies, portable amplifiers** and many more skills acquired through strong desire to learn, love for knowledge, courage and strict discipline in experimenting and R&D. He is certified in **PLC Automation S7 3000, AVR Microcontroller and Digital Circuit Design.**

To learn more about him check out his recently-launched blog at **[www.elisha.network](http://www.elisha.network)**



Please [CLICK HERE](#) to download the registration form & learn about the pricing. Kindly fill it up and fax / e-mail it to us.

You can register 2 weeks earlier prior to the Training Date to benefit from an earlybirds discount!

Liking our [FACEBOOK PAGE](#) will entitle you to 2% discount as well!

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5-6, Jalan USJ 9/5Q, Subang Business Centre, 47620 UEP Subang Jaya, Selangor, Malaysia

**Selangor Office:**  
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**Penang Office:**  
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## REGISTRATION & CONTACT US

### WEBSITE

<https://www.fictron.com>  
<https://www.fictron.net>  
<https://www.fictron.biz>

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[training@fictron.com](mailto:training@fictron.com)

### BUSINESS HOURS

Monday - Friday  
9:00 AM - 6:00 PM  
Saturday - Sunday Closed

\*Closed on Public Holiday

### QR CODE

