

# **Certified Electrician Training Program**



**This highly specialized and concentrated Program is ideally suited to following individuals who:**

- **A people who would like to become a professional Electrician.**
- **The people who are engaged in this profession, but not have the accredited certification can join.**
- **The professionals, who have sound experience and exposure, but cannot excel due to good certification, may join.**

**Program is offered by: 3D Educators – Trainers & Consultants**

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## Program Details

### Inauguration

The Training Program will be inaugurated by a senior member of 3DEducators

### Program Structure

Number of classes	5 Classes
Duration of each class	4-Hour with Break
Total Duration	3 - Months

### Other Learning Activities

Classroom Assignments	4
Presentations by Trainees	1

## **Program Topics and Time Allocation**

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The participants will cover the following syllabus:

### **Certified Painter**

The comprehensive training program related to painting and its special work. The participant will cover the following detailed course content on Course Content Page.

## **About the Program Designer & Instructor**

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### **CONSORTIUM OF EXPERTS**

The program is developed according to the requirements and need of the market. There are so many jobs that are available, which does not need so much theory, it will require Skills.

The program creates the opportunity to individuals and organizations, which can get the benefits from this state of art program and become more productive.

We “3D EDUCATORS” Team are thankful and highly appreciated to the team of experts who provided this wonderful accredited and recognized program for all for any sort of organization.

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## Program Syllabus

### COURSE CONTENT:

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Module 1: Safety and Communication

Module 2: Electrical/Electronic Principle

Module 3: Electrical/Electronic Principle and Technology

Module 4: Electrical Wiring

Module 5: PLC Programming

Module 6: Estimation and Installations

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## **FINAL CERTIFICATION SHALL BE AWARDED BY IMRTC (INTERNATIONAL MANAGEMENT RESEARCH & TECHNOLOGY CONSORTIUM) – USA**

Students who are unable to appear for the final exam are required to submit a written application stating the reason for not appearing for the exam. 3D Educators reserves the right to approve or deny such applications. If approved, the student will be allowed to sit for the exam within one month. Failure to do so, the student will be resubmit the examination fee and sit the future schedule exam. Without passing of the exams no certification will be awarded.

### **Overall objective of the course**

The main objective of this course is to experience and understand real life situations in industrial organizations and their related environments and accelerating the learning process of how student's knowledge could be used in a realistic way.

### **Job Opportunities available immediately and in future**

After completing this course, learner will have following career opportunities:

- o Offer services as an electrician to an electrical shop, industry and to building contractors.
- o Work as an Assistant Electrician in Public and Private Organizations.
- o Seek employment in Industries (manufacture/assembly)
- o Set up of his or her enterprise.
- o Work as Contractor for Annual Maintenance/Repair of residential/institutional/commercial buildings.

### **Skill Standards**

The certificate in the occupation of General Electrician will be awarded to those who are competent in the following four units:

- o Carry out Industrial electrical installations
- o Install , service and repair/replace electrical control system and protective switch-gear
- o Install industrial safety /security and communication System
- o Prepare estimates for electrical installations

## **Module 1: Safety and Communication**

### **1) Types of electrical hazards**

- Electrical burn
- Increasing heart beat
- Flash burn
- Thermal contact burn

### **2) How to identify different voltages**

- AC Supply
- Single phase supply
- Three phase supply DC supply

### **3) Identification of equipments**

- Basic units of measurement
- Inside and outside calipers
- Vernier caliper and vises
- Micrometer and gauges
- Drilling, filling and soldering tools
- Digital measuring instruments
- Care and maintenance of measuring tools Identifying
- and using different types of screw drivers
- Identifying and using different types of pliers, wrenches, L-keys,
- Spanners, bearing pullers
- Using and servicing line tester 2-Pole tester
- Using and servicing hand drill and electric drill machines
- Using and servicing different kinds of soldering iron, blow torch
- and safety goggles
- Using bradawl and mandrel

### **4) Electric shock can cause**

- Stopping of breathing
- Burns
- Muscle spasms
- Abnormal heart beat

**5) Associated risks and forces of electricity**

- What are the risks from electricity
- Who is most at risks from electricity
- Legal duties and obligations around electricity
- Assessing the risks from electricity

**6) Participants in work place communication**

- Obtain and convey workplace communication
- Participate in meetings and discussions
- Complete work related documents

**7) Work in team environment**

- Identify and describe team role and responsibility
- Work as team leader
- Work as team member
- Effective form of communication

**8) Practice occupational health and safety**

- Safety precautions and practices
- Work according to safety rules
- Identify risks and hazards
- Safety goggles and other protective devices
- Hand tools

**9) Practice general workshop rules and regulations**

- Memorize workshops rules and regulations
- List tool required for job
- Working to safety regulations
- Elementary first aid in electrical shops

**10) Practices for preventing electrical accidents**

- Report hazards
- Use equipment properly
- Inspect and test equipment regularly
- Use power cords and outlets properly
- Avoid overloading circuits



## **Module 2: Electrical/Electronic Principle**

### **1) Introduction to electric circuits**

- Electrical/Electronic symbols
- Electric current and quantity of electricity
- Potential difference and resistance
- Electrical measuring instrument
- Linear and non linear devices
- Ohm's law
- Conductors, Insulators and semi conductor
- Electrical Power and energy
- Resistance and resistivity
- Temperature coefficient of resistance
- Resistor color coding and ohmic values

### **2) Series and parallel networks**

- Series circuits
- Potential divider
- Parallel network
- Current division
- Loading effect
- Potential meters and rheostats
- Relative and absolute and short circuits
- Wiring lamps in series and in parallel

### **3) Capacitor and capacitance**

- Introduction to capacitor
- Electrostatic field
- Electric field strength
- Capacitance
- Permittivity
- Parallel plate capacitor
- Series and parallel combination of capacitors
- Color coding of capacitor
- Energy stored

#### 4) Magnetic circuits

- Magnetism and magnetic circuits
- Magnetic field and magneto motive force
- Reluctance

#### 5) Electromagnetism

- Introduction of electromagnetism
- Electromagnetism Induction
- Inductor and Inductance
- Self and mutual Inductance

#### 6) Semi conductor devices

- Semi conductor material
- Conduction in semi conductor materials
- P-N Junction
- Forward and reverse bias
- Rectify diode and zener diode
- Bi polar junction
- Transistor (PNP, NPN)
- Transistor Action
- Transistor Biasing
- Transistor characteristics
- FET biasing
- Field effect transistor
- FET characteristics

### Module 3: Electrical/Electronic Principle and Technology

#### 1) AC/DC circuit theory

- General DC circuit theory
- Kirchhoff's voltage law
- Kirchhoff's current law
- RC time constant
- LR time constant
- AC wave form and values
- Equation of sinusoidal waveform
- Rectification
- Half wave rectification
- Full wave rectification
- Bridge Rectification

- Filtration
- Power supply
- Purely resistive AC circuit
- Purely inductive AC circuit
- Purely capacitive AC circuit
- R-L series AC circuit
- R-C series AC circuit
- R-L-C series AC
- circuit Resonance
- Q Factor
- Power triangle and power
- Factor Star connection load
- Delta connection load
- Power in three phase system
- Measurement of power in three phase system and
- tool Advantages of three phase system

## **Module 4: Electrical Wiring**

### **1) AC/DC Wiring**

- Single phase wiring
- Three phase wiring
- Star delta wiring
- Contactor wiring
- Relay wiring
- Protective devices wiring
- Single phase motor wiring
- Three phase motor wiring
- VFD power wiring
- DC supply wiring
- Controller wiring
- Input/output Module wiring
- Function Module wiring
- VFD control wiring
- Transformer wiring

### **2) Test the Electrical/Electronic Installations**

- Conductor continuity
- Polarity
- Phase sequence
- Earth fault

- Diode test
- Transistor test
- FET test
- Resistor test
- Capacitor test
- Inductor test
- Bridge test
- Transformer test

## **Module 5: PLC Programming**

- What is microcontroller
- Difference between microcontroller and PLC
- Compact and modular PLC
- Block diagram of PLC
- Input/output module
- Function module
- Programming

## **Module 6: Estimation and Installations**

### **1) Collect information for the electrical installation work**

- Gather information from the customer
- Enlist the material required for the installation work
- Obtain and compare current market prices of material, goods and switch gear of
- appropriate quality from several suppliers

### **2) Prepare estimate for the installation**

- Calculate no of labor hours & it costs according to current labor rates
- Calculate Transport cost
- Calculate profit margins
- Calculate and prepare document of total estimate

### **3) Obtain customers approval to commence the work**

- Present estimate to the customer in a standard format
- Understands customer feedback
- Make adjustments in estimate to accommodate customers feedback and obtain
- approval

## **ONLINE LIVE CLASSES FACILITY AVAILABLE**

- Instructor Led Training
- Real Time Presentations
- Interactive Classes
- Complete Notes and Other Stuff shall be provided through our Secure Student Login Member's Area
- For Online Live Classes, you may please download the Admission Form through our website <http://www.3deducators.com>. Fill it properly and attached the required document along with Picture and send back to [info@3deducators.com](mailto:info@3deducators.com) with scanned fee submitted voucher in the bank.
- For Pakistan you may submit the fee at any MCB Branch with the title of "3D EDUCATORS-TRAINERS & CONSULTANTS".
- If you are outside Pakistan then you may transfer via Bank to Bank or any western union, Fast Track, Money Gram or else International Transfer Body.
- After Admission, if you don't have GMAIL Account then you are requested to kindly make one GMAIL Account and shared it [info@3deducators.com](mailto:info@3deducators.com). Then further correspondence shall be made by our institute official.
- Extra Bandwidth Charges shall be incurred.
- If you are outside country or city then extra courier charges shall be incurred for Certificate.

## **PRECAUTIONARY MEASURES**

- ✓ During Classes, you are requested to make sure that you are in isolated room, where no noise should be there except your voice.
- ✓ Kindly Switch Off your Cell Phone during the class, because it will disturb the quorum of class.
- ✓ If you have taken the admission in the course online, ethically it is recommended and suggested that you only avail this facility.
- ✓ Recording of Lectures are not allowed at your end.

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**MANAGEMENT**

**3D EDUCATORS – TRAINERS & CONSULTANTS**



FINAL CERTIFICATION AWARDED BY IMRTC – USA

SAMPLE CERTIFICATE

**CERTIFICATE  
OF EXCELLENCE**

IMRTC USA Recognized

**CERTIFICATION**



*This is to Certify That*

**Mr. Danny Jones Wales**

*has successfully met the certification requirements as outlined in  
IMRTC content and the policies adopted thereunder; hereby grants the certification of*

**Certified OHSAS 18001 Lead Implementation**

Student ID: IM864532201

Date of Commencement: May 4, 2014

Date of Ending: July 4, 2014



*Cheryzel Rhodes*

Principal of Institute

Director Affiliations and Official Affairs

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**CERTIFICATE OF AUTHORIZATION**

**CERTIFICATE  
OF AUTHORIZATION**

IMRTC USA Recognized

**CERTIFICATE OF AUTHORIZATION**



*This is to Certify That IMRTC Authorized*

**3D EDUCATORS - TRAINERS & CONSULTANTS**

*to work as Training & Research Partner in capacity of  
PARTNER THROUGH PAKISTAN CHAPTER*

*for the scope of activity shown below in accordance with the applicable rules of  
the IMRTC. The use of this certification and the authority granted by this  
Certificate of Authorization are subject to the provision of agreement set  
forth in the application.*

*The validity of this certificate is for Two Years from the date of Issuance  
and will increase according to the performance*

*Issuance Date: 16 Aug 2015*

*Cheryyel Rhodes*

Director Affiliations and Official Affairs



Chapter ID: AS2933770

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