NITI

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رؤيـــة VISION
2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

ELECTRICAL

Short Courses

Approved By

أرامكو السعودية
saudi aramco

المؤسسة العامة
للتدريب التقني والمهني
Technical and Vocational
Training Corporation

Accredited By

ACCET
Accrediting Council for Continuing
Education and Training

TÜVRheinland

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1 Electrical Safety

12 Minimum participants

3 days

Course Overview

To alert and safeguard the attendees and their coworkers/partners at Job-site/or residential locations from all possible electrical hazards.

Who Should Attend?

Electrical , Mechanical , Metal , Chemical Instrumentation, Technicians and all field operators.

Enabling Objectives:

- Personal protective equipment
- Job site safety rules and permission to work
- classification of industrial Hazards
- Emergency Evacuation Planss

2 Electrical Hazards Recognition

12 Minimum participants

3 days

Course Overview

To teach Electricians & Electrical Technicians and Electrical Engineers the best practices to be followed to avoid any accidental Electrical Hazards that may arise at Work location.

Who Should Attend?

Electricians & Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Types of Electrical Hazards
- Work permit receiver/issuer
- Hold Tag lockout Techniques
- How to response to Electrical Hazards

3 Interpret Electrical symbols & Electrical Diagrams

12 Minimum participants

3 days

Course Overview

To teach electricians, Electrical Technicians. Electrical Engineers who to draw and understand the schematic diagrams and Wiring Diagram to meet the required operating sequence of electrical equipment.

Who Should Attend?

Electricians & Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Identify Electrical Symbols
- Schematic diagrams
- Wiring diagrams
- Convert schematic into wiring diagram
- Describe the operating Sequence of Circuits

4 Use National Electrical Code (NEC)

12 Minimum participants

3 days

Course Overview

To Teach Electricians, Electrical Technicians. Electrical Engineers how to comply with the NEC standards when installing Electrical Equipment at Hazardous /Nonhazardous Locations.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Purpose of Compliance with (NEC) Standards
- How to use NEC standards in Electrical Installations
- NEC standards for Electrical Inspection

5

Install & Bend Electrical Conduits

12 Minimum participants

3 days

Course Overview

To Teach Electricians, Electrical Technicians. Electrical Engineers how to use Power Threading Machine and conduit Benders to perform electri-cal installations.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Cut and ream Electrical Conduits
- Use Electrical Conduit Bender to
- Form 90 degree Bends
- Make Saddle Bends
- Make offset of 30/45/degrees angles
- Fasten conduit Using Clamps /straps

6

Cable Splicing and Testing

12 Minimum participants

3 days

Course Overview

To Train Electricians, Electrical Technicians. Electrical Engineers how to Splice power cables using heavy duty crimping tools and Split-Bolt Con-nectors and test the splicing joint for Zero Ohm resistance.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Cut heavy duty cable using cable Cutter
- Remove Cable outer cover/ Insulation
- Connect Cables Sections using Sleeve connectors
- Connect Cables using copper split-bolt Connectors
- Apply Insulation Layers Equivalent to Factory Layers
- Using DLRO test the splice for Zero Ohm

7

Install & Test Lighting Circuits

12 Minimum participants

3 days

Course Overview

To Train Electricians, Electrical Technicians. Electrical Engineers how to install and test lighting System in Hazardous /Non Hazardous Locations Using different Methods of Control I.e. Switches Photo -Controllers and magnetic relays.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Install High Intensity Mercury Lamp
- Install High Intensity sodium Lamp
- Connect single pole switch to control the lamp
- Test circuit for insulation Resistance
- Test circuit for continuity
- Energize and Operate the Circuit
- Replace Single Pole switch by Two Three -Way Switches

8

Install & Test Single/Three Phase Motors

12 Minimum participants

3 days

Course Overview

ToTo teach and Train Electricians, Electrical Technicians. Electrical Engineers how to install and test different types of AC motors 3-Phase 1-phase motors in compliance with NEC and Saudi National Standard.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Understand Motor Name Plate Data
- Perform Insulation Resistance Test
- Perform winding Balance Test
- Connect the dual voltage Motor for High Voltage Supply
- Connect the dual voltage Motor for low Voltage Supply
- Operate the motor and measure the speed using laser tachometer

9

Connect & Test Power Transformers

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers how to install and test power transformers and perform electrical testing before and after connection to power Supply.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Understand transformer Name Plate Data
- Identify high /Low voltage Windings
- Perform winding insulation resistance
- Perform winding continuity test
- Connect the transformer to step-up the volt.
- Perform Polarity test Additive/Subtractive

10

Connect & Troubleshoot Motor Control Circuit

12 Minimum participants

3 days

Course Overview

To teach and Train Electrical Technicians. Electrical Engineers how to follow a correct and professional troubleshooting techniques to rectify faults of motor control circuits.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers. Engineers.

Enabling Objectives:

- Connect 3-Phase Motor Manual Starter
- Connect 3-wire control circuit using 3-phase Magnetic Motor Starter
- Connect Forward/Reverse control Circuit with Electrical Interlock
- Connect Forward/Reverse control Circuit with push button & Electrical Interlock

11 Maintain Battery System

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers how to maintain and test battery Power supply system set battery charger for equalizing/float voltages.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Operate the three phase Battery Charger
- Set the charger output volt on float Voltage of Battery Bank
- Replace Defective Battery without interrupting the DC output of the Battery Bank
- Connect the load to discharge the battery Bank
- Set the charger output volt on Equalizing Voltage of Battery Bank
- Record the equalizing Charging Current

12 Connect Photocell Controllers Circuits

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers on how to connect different types of photo controllers to control outdoor lighting systems.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Types of Photocells
- Operating Principles of each Type
- Why photocell are used to Control Lighting System
- Connect photocell to control lighting Circuits

13

Troubleshoot Sequential Control Circuit

12 Minimum participants

3 days

Course Overview

To teach and Train Electrical Technicians. Electrical Engineers on how to trace and track the operating sequence of industrial simulator then rectify injected faults in a logical and professional manner.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Explain Operating Sequence using schematic Diagram
- Develop Fault hypotheses and highlighted the suspected lines. Of schematic Diagram
- Using Multi-Meter test to locate the fault
- Clear the fault and operate the Circuit

14

Maintain & Troubleshoot Rotork Motor Operated Valves

12 Minimum participants

3 days

Course Overview

To teach and Train Electrical Technicians. Electrical Engineers on how to trace the electrical diagrams of motor operated valve and how to set and configure its operating parameters.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Understand Schematic /Wiring Diagrams
- Trace the wiring Connections
- Describe the operating principle of the MOV actuator
- Troubleshoot the inserted faults in safe and logical Sequence

15

Electrical Test Equipment

12 Minimum participants

3 days

Course Overview

To teach and Train Electrical Technicians. Electrical Engineers on how to use different types of Electrical Test equipment on energized /DE energized circuits to ensure safe and proper operation.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Use Digital Multi-meter to measure Volt. Resistance Diode testing
- Megger tester to test insulation Resistance
- Pipe and cable Locator to locate hidden pipes/cables
- Use Camp-On meter to measure AC /DC currents
- Use Laser Tachometer to measure Motor speed

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Connect & Test Forward/ Reverse Motor Control Circuit

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers on how to connect and test Forward/Reverse motor control circuits with different interlock systems and timing circuits.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Connect power circuit for 3-Phase Combination Magnetic Starter
- Connect Control Circuit of Forward /Reverse with Electrical Interlock
- Connect forward /Reverse control with Push button and Electrical interlocks
- Use Laser Tachometer to measure Motor speed

17

Connect & Test Timing Circuits

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers the operating principles of On-delay, Off-Delay, Motor driven tim-ers, Electronic Timers.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Describe the operating principles of On-Delay/Off delay, Motor Driven Timers
- Connect On-Delay timer to operate two motors at different time intervals
- Connect Off-Delay timer to operate two indication Lamps
- Connect motor Driven timer to Simulate Traffic Signal operating sequence

18

Connect & Test an Integrated Power System Simulator

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians, Electrical Engineers about Electrical power generation. Transmission distribution stages and protection systems used to ensure safe and efficient

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Connect power generator
- Synchronize power generator with existing power supply
- Connect step-up transformer in Delta/ Delta
- Connect step-Down transformer in Delta/ star
- Connect protective Relays
- Connect power Factor Capacitor Bank

19

Construct & Test Bridge Rectifier Circuits

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers on how to construct rectifier circuits and test the rectifier output using oscilloscope and digital Meters.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- SCR & Diode testing
- Construct half-wave Rectifier Circuit
- Construct full wave rectifier Circuit
- Construct bridge rectifier Circuit. With filtering Capacitor
- Use the oscilloscope to test the O/P wave form

20

PV-Photo Voltaic Power

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical Engineers how to install and test solar modules. Inverters. Battery Bank, and power distribution panels for domestic utilization.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Install and Test Solar Modules
- Connect and test the Battery Bank
- Connect and test the inverter
- Install and connect distribution panel

21 Operating Principles & Startup of Uninterruptable Power Supply System (UPS)

12 Minimum participants

3 days

Course Overview

To teach and Train Electricians, Electrical Technicians. Electrical operators how to startup and operate a redundant uninterruptable Power supply System in safe and proper Manner.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- System Components
- Operating Sequence
- Startup procedure
- Sequential shut down Procedure

22 Setting Operational Parameters of Uninterruptable Power Supply System (UPS)

12 Minimum participants

3 days

Course Overview

To teach and Train Electrical Technicians. Electrical operators how to startup and setup the operating parameters of a redundant uninterruptable Power supply System to ensure correct and safe operational mode.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- System Components
- Operating Sequence
- Startup procedure
- Sequential shut down Procedure

23

Locate & Rectify Faults on Underground Electrical Cable

12 Minimum participants

3 days

Course Overview

To teach and Train Electrical Technicians. Electrical engineers how to use cable and pipe locator to locate & rectify Electrical Cables faults.

Who Should Attend?

Electricians, Electrical Technicians and Electrical Engineers.

Enabling Objectives:

- Use cable and pipe locator
- Setup the locator for estimated distance
- Locate and rectify Faults

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Gutor UPS Level 1

12 Minimum participants

3 days

Course Overview

To Teach Electrical Operators & Electrical Electricians how to Start-up, Shutdown and Operate the Gutor UPS System.

Who Should Attend?

Electrical Electricians & Electrical Operators.

Enabling Objectives:

- Introduction to the specification Of the UPS components
- Perform the Start-up & Shut-down procedure
- Operate the UPS in the following modes:-

1. Normal Operation With one Unit Active
2. Parallel/redundant mode
3. Battery operation Mode
4. Bypass Operation
5. Charger Only.
6. Standby Mode.
7. Manual Bypass
8. Separation of Redundancy

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Gutor UPS Level 2

12 Minimum participants

3 days

Course Overview

To Teach Electrical Engineers & Electrical Electricians, how to set the operational parameters of the Gutor UPS System.

Who Should Attend?

Electrical Electricians & Electrical Engineers.Technicians and all field operators.

Enabling Objectives:

- Principles of Thyristor Rectifier and Inverter operation
- Preventive maintenance and replacement of faulty components including fuses and ventilation fans
- Tracing single -line diagrams and system lay-out drawing
- Access Operator Stack to set all operating Parameters

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Gutor UPS Level 3

12 Minimum participants

3 days

Course Overview

To Teach Electrical Engineers & Electrical Electricians on how to operate, maintain and troubleshoot the Gutor UPS System.

Who Should Attend?

Electrical Engineers & Senior Electrical Electricians

Enabling Objectives:

- Access the Setting and calibration stacks
- Calibrate & Maintain all the operating Parameters
- Troubleshoot the inserted faults in a logical sequence
- Identify & Replace Faulty Components and Restore operation


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CUTTER

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