

Electrical Engineering for Electrician - CPD Certified

Course 01: Electrician Skills Complete Bundle

- Module 01: Introduction and Basics
- Module 02: Electrical Units and Ohm's Laws
- Module 03: Direct Current
- Module 04: Alternating Current Basics
- Module 05: Voltage and Resistance
- Module 06: Capacitance and Capacitors
- Module 07: Magnetism
- Module 08: Safety Precautions

Course 02: Electronic & Electrical Devices Maintenance

- Section 1: Introduction & Getting Started
- Section 2: Electronic and Electrical maintenance Repair
- Section 3: Tools Needed
- Section 4: Electronic Components
- Section 5: Testing
- Section 6: Troubleshooting
- Section 7: Introduction to Electronic Components: A Step by Step Guide

Course 03: PAT Level 4

- Module 01: Introduction to PAT
- Module 02: Relevant Statutory Provisions for PAT
- Module 03: Risk Assessment
- Module 04: Reducing and Controlling Risks
- Module 05: Electrical Units and Appliance Classification
- Module 06: Initial Visual Examination
- Module 07: Instruments for Testing and Equipment Inspection
- Module 08: Electrical Installation Testing

- Module 09: Safety Precautions in Electrical Testing
- Module 10: Reporting and Record-keeping

Course 04: Level 3 Heating, Ventilation & Air Conditioning (HVAC) Technician

- Module 01: Introduction to Heating, Ventilation & Air Conditioning (HVAC)
- Module 02: Heating Fundamentals and Psychrometrics
- Module 03: HVAC Systems
- Module 04: Heating and Ventilation
- Module 05: Air Conditioning Systems for HVAC Technicians
- Module 06: Compressors, Water Chillers, and Fans
- Module 07: Piping for HVAC Technician
- Module 08: Duct System in HVAC
- Module 09: Refrigeration and Refrigerants
- Module 10: Special Applications
- Module 11: HVAC System Selection
- Module 12: Safety in the HVAC Industry

Course 05: Digital Electric Circuits & Intelligent Electrical Devices

- Module 01: Introduction
- Module 02: Numbering Systems
- Module 03: Binary Arithmetic
- Module 04: Logic Gates
- Module 05: Flip-Flops
- Module 06: Counters & Shift Registers
- Module 07: Adders

Course 06: Light Current Systems for Electrical Engineering

Light Current Fire Alarm System

- Module 1- Light Current Fire Alarm System Part 1
- Module 2- Light Current Fire Alarm System Part 2
- Module 3- Light Current Fire Alarm System Part 3
- Module 4- Light Current Fire Alarm System Part 4
- Module 5- Light Current Fire Alarm System Part 5
- Module 6- Light Current Fire Alarm System Part 6

Light Current MATV and Telephone System

- Module 1- Light Current MATV System Part 1
- Module 2- Light Current MATV System Part 2
- Module 3- Light Current Telephone System

Light Current Data System

- Module 1- Light Current Data System Part 1
- Module 2- Light Current Data System Part 2

Light Current CCTV System

- Module 1- Light Current CCTV System Part 1
- Module 2- Light Current CCTV System Part 2

Light Current Sound System

- Module 1- Light Current Sound System Part 1
- Module 2- Light Current Sound System Part 2

Course 07: Electric Power Metering for Single and Three Phase Systems

- Module 01: Basic Metering Introduction
- Module 02: Power & Energy
- Module 03: AC Power
- Module 04: Instrumentation
- Module 05: Single Phase Metering
- Module 06: Instrument Transformers

- Module 07: Three Phase Metering
- Module 08: Cross Wattmeter Verification

Course 08: Electrical 3 Phase Power Transformers Fundamentals

- Module 01: Introduction
- Module 02: The Ideal Transformer
- Module 03: The Real Transformer
- Module 04: Instrument Transformers
- Module 05: Three Phase Power Transformers
- Module 06: Transformer Clock System Vector Nomenclature
- Module 07: Transformer Construction and Cooling
- Module 08: Transformer Protection
- Module 09: Transformer Relays

Course 09: Electrical Power System and High Voltage Engineering

- Module 1- Introduction to Electrical Power System and High Voltage
- Module 2- Types of High Voltage
- Module 3- Generation of High Voltage AC at Power Frequency
- Module 4- Generation of High Voltage High Frequency AC
- Module 5- Generation of High Voltage Impulse Part 1
- Module 6- Generation of High Voltage Impulse Part 2
- Module 7- Generation of High Voltage DC Part 1
- Module 8- Generation of High Voltage DC Part 2

Course 10: MATLAB Simulink for Electrical Power Engineering

Unit 1- Applications on Matrices in MATLAB

- Module 1- Solving One Non Linear Equation in MATLAB Using Fzero Function
- Module 2-Example 1 on Solving Multiple Non Linear Equations in MATLAB Using Fsolve Function
- Module 3- Example 2 on Solving Multiple Non Linear Equations in Matlab Using Fsolve
- Module 4-Application Multi Level Inverter Part 1
- Module 5- Application Multi Level Inverter Part 2

Unit 2-Power Electronics Simulations Using Simulink in MATLAB

- Module 1-Introduction to MATLAB Simulations Using Simulink
- Module 2-Half Wave Uncontrolled Rectifier with R Load Principle of Operation
- Module 3- Half Wave Controlled Rectifier R Load Principle of Operation
- Module 4-Simulation of Half Wave Controlled Rectifier Using Simulink In Matlab
- Module 5- Principle of Operation of Fully Controlled Bridge Rectifier Part 1
- Module 6- Principle of Operation of Fully Controlled Bridge Rectifier Part 2
- Module 7-Simulation of Bridge Controlled Rectifier
- Module 8-AC Chopper with R Load Principle of Operation
- Module 9- Simulation of AC Chopper with R and RL Loads in MATLAB
- Module 10- Buck Regulator Principle of Operation Part 1
- Module 11-Buck Regulator Principle of Operation Part 2
- Module 12-Simulation of Buck Regulator in MATLAB
- Module 13-Boost Regulator Principle of Operation
- Module 14- Simulation of Boost Regulator in MATLAB
- Module 15-Buck-Boost Regulator Principle of Operation
- Module 16- Simulation of Buck-Boost Regulator
- Module 17- Single Phase Half Bridge R-Load
- Module 18- Single Phase Half Bridge RL-Load
- Module 19-Simulation of Single Phase Half Bridge Inverter
- Module 20-Single Phase Bridge Inverter R-Load
- Module 21-Single Phase Bridge Inverter RL-Load

- Module 22-Simulation of Single Phase Bridge Inverter
- Module 23-Three Phase Inverters and Obtaining The Line Voltages
- Module 24-Three Phase Inverters and Obtaining The Phase Voltages
- Module 25-Simulation of Three Phase Inverter
- Module 26-Simulation of Charging and Discharging Capacitor Using Matlab

Unit 3- Solar Energy Simulation Using Simulink in MATLAB

- Module 1-Separately Excited DC Machine
- Module 2-DC Motor Modelling without Load Using Simulink in MATLAB
- Module 3-DC Motor Modelling with Load Using Simulink in MALTAB
- Module 4-DC Motor Block Simulation Using Power Library in MATLAB

Unit 4- DC Motor Simulation Using Simulink in MATLAB

- Module 1-Construction and Principle of Operation of Synchronous Generator
- Module 2-Equivalent Circuit and Phasor Diagram of Non Salient Synchronous Machine
- Module 3-Equivalent Circuit and Phasor Diagram of Salient Synchronous Machine
- Module 4-Simulation of Synchronous Machine Connected to Small Power System

Unit 5- Induction Motor Simulation Using Simulink in MATLAB

- Module 1-Construction and Theory of Operation of Induction Machines
- Module 2-Equivalent Circuit and Power Flow in Induction Motor
- Module 3-Torque-Speed Characteristics of Induction Motor
- Module 4- Simulation of Induction Motor or Asynchronous Motor Using Simulink

Unit 6- Synchronous Generator Simulation in Simulink of MATLAB

- Module 1- Importing Data from PSCAD Program for Fault Location Detection to MATLAB Program

Unit 7- Power System Simulations

- Module 1-How to Implement PID Controller in Simulink of MATLAB
- Module 2-Tuning a PID Controller In MATLAB Simulink

Course 11: Renewable Energy Expert Certification

- Module 01: An Introduction to Sustainable Energy
- Module 02: Solar Energy: Thermal
- Module 03: Solar Energy: Photovoltaics
- Module 04: Wind Energy
- Module 05: Bioenergy
- Module 06: Geothermal Energy
- Module 07: Tidal Energy
- Module 08: Environmental Impacts: A Global and Regional Assessment
- Module 09: Renewable Energy and Sustainable Development
- Module 10: The Future of Renewable Energy in the UK into the 2020s and Beyond

Course 12: Sustainable Energy and Development Diploma

- Module 01: An Introduction to Sustainable Energy
- Module 02: Solar Energy: Thermal
- Module 03: Solar Energy: Photovoltaics
- Module 04: Wind Energy
- Module 05: Bioenergy
- Module 06: Geothermal Energy
- Module 07: Tidal Energy
- Module 08: Environmental Impacts: A Global and Regional Assessment
- Module 09: Renewable Energy and Sustainable Development
- Module 10: The Future of Renewable Energy in the UK into the 2020s and Beyond

Course 13: Solar Energy

Unit 1- Basics of Solar Energy System

- Module 1- Introduction To PV System Construction
- Module 2- Solar Heating, Solar Irradiation And Panels
- Module 3- Effect of Insolation and Temperature on V-I Curve
- Module 4- PV Installation, Short Circuit And Open Circuit Tests Using Avometer
- Module 5- Solar Wires And Cables Installation Process
- Module 6- Mounting Of PV System
- Module 7- Shading and Tilt angle In Solar Energy
- Module 8- Half Cut Cell Technology In PV System For Solar Engineering
- Module 9- Importance Of Charge Controller In Solar Energy System
- Module 10- PWM And MPPT Charge Controllers
- Module 11- Understanding More about MPPT Solar Charge Controller For Solar Energy Course
- Module 12- Junction Box In Solar Energy System
- Module 13- Wiring of Junction Box In Solar Energy System
- Module 14- Function, Types And Data Sheet Of Inverter
- Module 15- Determining PV Array Maximum System Voltage

Unit 2- Batteries in PV System

- Module 1- Construction And Types Of Batteries In Solar Energy System
- Module 2- Charging Of Lead Acid Batteries And Hydrometer In Solar Energy System
- Module 3- Maintenance Of Batteries And Methods Of Charging In Solar Energy System
- Module 4- Cycle of Batteries

Unit 3- Components and Design of Off Grid Solar Energy System

- Module 1- Off-Grid Solar System
- Module 2- Advantages of Off-Grid Solar System
- Module 3- Equipment of Off-Grid Solar System
- Module 4- Selection and Datasheet of the Panel
- Module 5- Inverter Selection

- Module 6- Example 1 On Designing Off Grid System
- Module 7- Determine Power Consumption Demands
- Module 8- Size the PV modules
- Module 9- Inverter sizing
- Module 10- Battery Sizing
- Module 11- Solar Charge Controller Sizing
- Module 12- MPPT Charge Controller Sizing
- Module 13- Example 2 Design of an OFF Grid System

Unit 4- Designing of ON Grid Solar Energy System

- Module 1- Grid-Tied Solar System
- Module 2- Advantages of Grid-Tied Solar System
- Module 3- Equipment of Grid-Tied Solar System
- Module 4- Example Design of an On Grid System
- Module 5- PV Energy According to Area

Unit 5- Design of PV System Using PVSyst Programme

- Module 1- Design of an Off Grid Solar Energy System Using PVSYST Program
- Module 2- Design Of An On Grid Solar Energy System Using PVSyst Program
- Module 3- Mega PV System Design Using PVSyst Program For Solar Energy

Unit 6- Solar Water Pumping System

- Module 1- Introduction To Water Pumping System And Steps Of Design
- Module 2- Solved Example On Solar Pumping System Design

Unit 7- Protection of PV System

- Module 1- Introduction to Protection Of PV System
- Module 2- Selection of Fuses and Protection of String
- Module 3- Protection of Arrays
- Module 4- Protection of Inverter
- Module 5- Protection of Transformer
- Module 6- Surge Protection Device
- Module 7- Grounding of PV System
- Module 8- Types of BusBars in PV System and Selection of BusBars

Unit 8- Design Using Excel Sheet

- Module 1-Design Of Off Grid PV System Using Excel Sheet

Unit 9- Single Line Diagram of PV System

- Module 1- Single Line Diagram Of PV System And Selection Of Fuses And Breakers

Unit 10- MATLAB and ETAP PV Simulation

- Module 1- Simulation Of PV Cell In MATLAB And Obtaining V-I Characteristics
- Module 2- Get a Complete Grid Connected PV Solar Energy System In MATLAB Simulink
- Module 3- PV System Simulation Using ETAP Lesson

Course 14: Energy Saving in Electric Motors

- Module 01: Introduction
- Module 02: Classification
- Module 03: Terminologies
- Module 04: Losses
- Module 05: Energy saving in motors part I
- Module 06: Energy saving in motors part II
- Module 07: Energy saving in motors Part III
- Module 08: Energy saving in motors part IV
- Module 09: Energy saving in motors part V
- Module 10: Energy Efficient Motor

Course 15: Electric Circuits for Electrical Engineering

Unit 1- Basic Concepts

- Module 1- What Is an Electric Circuit
- Module 2-System of Units
- Module 3- What Is an Electric Charge
- Module 4- What Is an Electric Current
- Module 5-Example 1
- Module 6- Example 2

- Module 7- Example 3
- Module 8- What Is Voltage
- Module 9- What Is Power
- Module 10- What Is Energy
- Module 11- Example 4
- Module 12- Example 5
- Module 13- Dependent and Independent Sources
- Module 14- Example 6 Part 1
- Module 15- Example 6 Part 2
- Module 16- Application 1 Cathode Ray Tube
- Module 17-Example 7
- Module 18- Application 2 Electricity Bills
- Module 19- Example 8

Unit 2- Basic Laws

- Module 1- Introduction to Basic Laws
- Module 2- Definition of Resistance
- Module 3- Ohm's Law
- Module 4- Types of Resistances
- Module 5- Open and Short Circuit
- Module 6- Definition of Conductance
- Module 7-Example 1
- Module 8-Example 2
- Module 9- Example 3
- Module 10- Branch, Node and Loops
- Module 11- Series and Parallel Connection
- Module 12- KCL
- Module 13- KVL
- Module 14- Example 4
- Module 15- Example 5
- Module 16- Example 6
- Module 17- Series Resistors and Voltage Division

- Module 18-Parallel Resistors and Current Division
- Module 19- Analogy between Resistance and Conductance
- Module 20-Example 7
- Module 21-Example 8
- Module 22- Introduction to Delta-Wye Connection
- Module 23-Delta to Wye Transformation
- Module 24- Wye to Delta Transformation
- Module 25-Example 9
- Module 26- Example 10
- Module 27- Application Lighting Bulbs
- Module 28-Example 11

Unit 3- Methods of Analysis

- Module 1- Introduction to Methods of Analysis
- Module 2- Nodal Analysis with No Voltage Source
- Module 3-Example 1
- Module 4-Cramer's Method
- Module 5-Nodal Analysis with Voltage Source
- Module 6- Example 2
- Module 7- Example 3
- Module 8-Mesh Analysis with No Current Source
- Module 9-Example 4
- Module 10- Example 5
- Module 11-Mesh Analysis with Current Source
- Module 12-Example 6
- Module 13-Nodal Vs Mesh Analysis
- Module 14-Application DC Transistor
- Module 15-Example 7

Unit 4- Circuit Theorems

- Module 1-Introduction to Circuit theorems
- Module 2-Linearity of Circuit
- Module 3-Example 1

- Module 4-Superposition Theorem
- Module 5- Example 2
- Module 6-Example 3
- Module 7-Source Transformation
- Module 8-Example 4
- Module 9-Example 5
- Module 10-Thevenin Theorem
- Module 11-Example 6
- Module 12-Example 7
- Module 13- Norton's Theorem
- Module 14-Example 8
- Module 15-Example 9
- Module 16-Maximum Power Transfer
- Module 17-Example 10
- Module 18-Resistance Measurement
- Module 19-Example 11
- Module 20-Example 12
- Module 21-Summary

Unit 5- Operational Amplifiers

- Module 1-Introduction to Operational Amplifiers
- Module 2-Construction of Operational Amplifiers
- Module 3-Equivalent Circuit of non Ideal Op Amp
- Module 4- V_o Vs V_d Relation Curve
- Module 5-Example 1
- Module 6-Ideal Op Amp
- Module 7- Example 2
- Module 8-Inverting Amplifier
- Module 9-Example 3
- Module 10-Example 4
- Module 11-Non Inverting Amplifier
- Module 12-Example 5

- Module 13-Summing Amplifier
- Module 14-Example 6
- Module 15-Difference amplifier
- Module 16-Example 7
- Module 17-Cascaded Op Amp Circuits
- Module 18-Example 8
- Module 19-Application Digital to Analog Converter
- Module 20-Example 9
- Module 21-Instrumentation Amplifiers
- Module 22-Example 10
- Module 23-Summary

Unit 6- Capacitors and Inductors

- Module 1-Introduction to Capacitors and Inductors
- Module 2-Capacitor
- Module 3-Capacitance
- Module 4-Voltage-Current Relation in Capacitor
- Module 5-Energy Stored in Capacitor
- Module 6-DC Voltage and Practical Capacitor
- Module 7-Example 1
- Module 8-Example 2
- Module 9-Example 3
- Module 10-Equivalent Capacitance of Parallel Capacitors
- Module 11-Equivalent Capacitance of Series Capacitors
- Module 12-Example 4
- Module 13-Definition of Inductors
- Module 14-Definition of Inductance
- Module 15-Voltage-Current Relation in Inductor
- Module 16-Power and Energy Stored in Inductor
- Module 17-DC Source and Inductor
- Module 18-Example 5
- Module 19-Series Inductors

- Module 20-Parallel Inductors
- Module 21-Example 6
- Module 22-Small Summary to 3 Basic Elements
- Module 23-Example 7
- Module 24-Application Integrator
- Module 25-Example 8
- Module 26-Application Differentiator
- Module 27-Example 9
- Module 28-Summary

Course 16: Electrical and Fire Safety Training - Level 2

- Module 01: Introduction and Basics
- Module 02: Introduction to Fire Safety
- Module 03: Voltage and Resistance
- Module 04: Capacitance and Capacitors
- Module 05: Safety Precautions
- Module 06: Fire Safety Legislation
- Module 07: Measures of Fire Safety
- Module 08: Fire Emergency: Evacuation Procedures

Course 17: Lone Worker Safety Course

- Module 01: Basics of Lone Working
- Module 02: Lone Worker's Safety Laws
- Module 03: Risk Assessment
- Module 04: Safe Working System for Lone Working
- Module 05: Conflict Avoidance and Resolution
- Module 06: Reporting and Recording Incidents
- Module 07: Physical and Mental Well-being
- Module 08: First Aid and Workplace Safety for Lone Workers

Course 18: Manual Handling Level 2

- Introduction, Legislation and Guidance
- Manual Handling Hazards and Injuries
- Manual Handling Risk Assessments
- Controlling and Reducing the Risks
- Safe Lifting Techniques

Course 19: RIDDOR Training

- Module 1: Health and Safety at Work and the Laws
- Module 2: Managing for Health and Safety
- Module 3: Risk Assessment and Common Risks
- Module 4: RIDDOR

Course 20: Decision Making and Critical Thinking

- Module 01: Introduction to Critical Thinking
- Module 02: Critical Thinking and the Judgment of Claims
- Module 03: Benefits and Barriers of Critical Thinking
- Module 04: Importance of Critical Thinking
- Module 05: Recognising a Critical Thinker
- Module 06: What Are the Critical Thinking Steps?
- Module 07: Critical Thinking Strategies
- Module 08: Problem-Solving Through Critical Thinking
- Module 09: Decision Making with Critical Thinking