



**INVITING INSTITUTES AND  
ORGANISATIONS AS  
TRAINING PARTNERS**



# **ELECTRICAL SAFETY PROFESSIONAL CERTIFICATION SCHEME (ESPCS)**

ESPCS, the Scheme for the certification of ES professionals working in the field of electrical safety based on the safety requirements recommended in IEC60364 (part 1 to 6), IEC61936 -1 and CEA Measures Relating to Safety and Electric Supply Regulations 2023.



## **IEC 60364 & IEC 61936 ARE GLOBAL STANDARDS FOR ELECTRICAL INSTALLATIONS.**

IEC 60364-1 gives the rules for the design, erection, and verification of electrical installations at nominal voltages up to and including 1000 V a.c. or 1500 V d.c. The rules are intended to provide for the safety of persons, livestock and property against dangers and damage which may arise in the reasonable use of electrical installations and to provide for the proper functioning of those installations.

Electrical Safety Regulations of most developed nations follow the structure of IEC 60364. Certified competence as per NEC's ESPCS becomes an easy way to secure international employment.

### **BODY OF KNOWLEDGE**

1. IEC 60364 (part 1 to 6)
2. IEC 61936-1
3. CEA Measures Relating to Safety and Electric Supply Regulations 2023

Since IEC standards are adopted by BIS, equivalent IS standards also can be used as these are available from BIS website as priced/free publications. Nationally made BIS standards including IS732 and NEC 2023 are free downloads from BIS website. IS732 is equivalent to IEC 60364(part 1 to 6). IS IEC 61936-1 is also available in BIS website, which is a priced version.

ESPCS verifies the competency of professionals working in Commercial, Industrial and Residential premises operating with Low Voltage. The scheme also includes safety requirements in the connected public supply up to and including 33 kV and with HV/LV transformer.



## TRAINING AND SKILL DEVELOPMENT OF ESPCS

NFE looks for training institutes to train the applicants and prepare them to demonstrate the knowledge and skill requirements as per the scheme document. The certification under ESPCS is to be carried out only by PrCB's duly accredited as per ISO/IEC 17024:2012.

Note: refer scheme documents for more details

### Training Institutes

Any organization who has knowledgeable manpower, experienced to educate the candidates on requirements of the standards in which the competency need to be demonstrated are invited to be a part of the skill development.

Course Duration: 30 to 50 Hours

Course Fee: decided by the institutions.

Location: Anywhere in India

### PARTS OF 60364 CONSIDERED IN ESPCS ARE:

- Part 1 Fundamental principles, assessment of general characteristics, definitions,
- Part 4-41 Protection against electric shock,
- Part 4-42 Protection against thermal effects,
- Part 4-43 Protection against overcurrent,
- Part 4-44 Protection against voltages disturbances and EM disturbances,
- Part 5-51 Common rules for selection and erection of electrical equipment,
- Part 5-52 Wiring systems,
- Part 5-53 Isolation, switching and control,
- Part 5-54 Earthing arrangements, protective conductors,
- Part 5-55 Other equipment,
- Part 5-56 Safety services,
- Part 5-57 Erection of stationary secondary batteries,
- Part 6 Verification.







## Training Module (NFE Certified Electrical Consultant)

Sl No	Subject	Duration
1	Fundamental principles, assessment of general characteristics, definitions, System earthing (TN/TT/IT)	5 (1)
2	Protection against electric shock, Basic protection, fault protection, additional protection.	4 (1)
3	Protection against thermal effects.	4 (Nil)
4	Protection against overcurrent & Wiring systems, protection of conductors, protection of parallel conductors.	6 (1)
5	Protection against voltages disturbances and EM disturbances.	3 (1)
6	Common rules for selection and erection of electrical equipment.	5 (1)
7	Isolation, switching and control.	3 (1)
8	Earthing arrangements, protective conductors.	3 (1)
9	DG/Transformers/UPS/secondary batteries/other equipment (LV & HV).	3 (1)
10	Safety Services.	4 (1)
11	Verification.	1 (Nil)
11	Total duration in Hours (including tests)	50

Note: The training institute shall conduct tests (duration as specified) after each chapter applicable if specified.





## Training Module (NFE Certified Electrical Installer)

SI No	Subject	Duration
1	Safe isolation: LOTO for single-phase and three-phase circuits, LOTO for single-phase and three-phase installations with multiple power sources.	1 (0.25)
2	Interpretation of design specification: Identification of protective devices from design and for selection of part numbers, Identification of wiring systems and routes from design for selection of containment and accessories, Identification of installation reference method from design, Identification of earthing arrangement and matching with design, Matching earth-fault loop impedance, prospective fault current and voltage drop from design and in actual installation.	2 (0.5)
3	Common rules for erection of electrical equipment: Classification of external influences, Selection of equipment with IP and IK ratings required by external influences, Identification of conductors by colour, Selection and installation of warning notices for high protective conductor currents and multiple supplies, Selection and installation of danger notices.	3 (0.25)
4	Erection of wiring systems: Installation of single core insulated and non-sheathed cable in conduit and trunking, Termination of steel and PVC conduit into enclosures, Installation of multicore cable on cable tray, Termination of multicore cable into enclosure using polyamide gland, Installation of multicore armoured cable on cable tray and clipped direct, Termination of multicore armoured cable into enclosure using double compression gland and earth tag, Termination of class 2 and class 5 conductors, Cutting, bending, threading and jointing of steel and PVC conduit.	4 (1.5)
5	Erection of switchgear and controlgear: Mounting of distribution boards, Installation of main switch (isolator), MCBs, SPDs, RCBOs and RCBO-AFDDs in distribution board, Termination of cables into MCB/RCBO/AFDD-RCBO terminals with calibrated torque screwdriver, Termination of cables onto MCCB terminals using calibrated tools, Installation of contactor for switching of high current load through a control switch, Installation of MCCB into enclosure with rotary switch and undervoltage release, Installation of a DOL starter.	4 (1.5)
5	Erection of earthing arrangement and protective conductors: Installation of main earthing conductor from MDB to MET, Installation of earth electrode and connection to MET, Installation of main protective bonding conductor from MET to water/gas pipe including termination, Installation of supplementary bonding conductor from water/gas pipe to current-using equipment including termination, Termination of multicore armoured cable from distribution board to CEE socket with use of earth tags, Testing continuity of armouring as a circuit protective conductor, Installation of reinforced PE conductor from equipment to MET, Conducting test to verify if metalwork is extraneous, Conducting test to verify if supplementary bonding is required.	3 (1.5)



## Training Module (NFE Certified Electrical Installer)

SI No	Subject	Duration
6	Erection of earthing arrangement and protective conductors: Installation of main earthing conductor from MDB to MET, Installation of earth electrode and connection to MET, Installation of main protective bonding conductor from MET to water/gas pipe including termination, Installation of supplementary bonding conductor from water/gas pipe to current-using equipment including termination, Termination of multicore armoured cable from distribution board to CEE socket with use of earth tags, Testing continuity of armouring as a circuit protective conductor, Installation of reinforced PE conductor from equipment to MET, Conducting test to verify if metalwork is extraneous, Conducting test to verify if supplementary bonding is required.	3 (1.5)
7	Erection of LV generating station: Installation of inverter with battery backup, Installation of inverter with PV cells, Installation of diesel generator.	1 (1)
8	Erection of safety services: Installation of emergency lighting system with battery backup, Installation of power source for fire detection and fire alarm systems.	3(0.5)
9	Inspection, testing and certification	1
10	Fault finding	1
	Total duration in Hours (including tests)	30

Note: The training institute shall conduct tests (duration as specified) after each chapter if specified.



## Training Module (NFE Certified Electrical Safety Verifier)

SI No	Subject	Duration
1	Fundamental principles, assessment of general characteristics, definitions, System earthing (TN/TT/IT).	5 (1)
2	Protection against electric shock, Basic protection, fault protection, additional protection.	2 (1)
3	Protection against thermal effects.	2(Nil)
4	Protection against overcurrent & Wiring systems.	2 (1)
5	Protection against voltages disturbances and EM disturbances.	2 (1)
6	Common rules for selection and erection of electrical equipment.	3 (1)
7	Isolation, switching and control.	2 (1)
8	Earthing arrangements, protective conductors.	2 (1)
9	DG/Transformers/UPS/secondary batteries/other equipment (LV & HV).	2 (1)
10	Safety Services.	2 (1)
11	Verification(Inspection)Filling out electrical installation verification report, Filling out electrical installation condition reports for installations with faults, Filling out form for inspection of electrical installations with faults (classification into C1, C2 or C3), Filling out schedule of circuit details and test results, Analyzing filled out schedule of test results for faults (classification into C1, C2 or C3) (practical).	7 (1)
12	Testing (practical).	5(1)
13	Fault finding: Identification and rectification break in Line, Neutral, Protective Conductors, Incorrect phase sequence, RCD tripping, Low insulation resistance, High resistance PE conductor, High earth fault loop impedance	2 (1)
	Total duration in Hours (including tests)	50

Note: The training institute shall conduct tests (duration as specified) after each chapter if specified.

# Electrical Instalation Verifatier



## Training for Trainers

NFE will train the selected trainers of the institutes and equip them to carry out training for the candidates. NFE's volunteers will support the trainers if necessary, during all training programs.

Note: The training for trainers will be conducted to institutions having MOU with NFE. Interested institutions are requested to contact [admin@nfees.org](mailto:admin@nfees.org)

## Examination and certification

Examination and Certification will be carried out by Accredited Personnel Certification Bodies based on ISO/IEC 17024. Please refer the scheme documents for more information.

## **IEC 60364 & IEC 61936 are global standards for electrical installations.**

Electrical Safety Regulations of most developed nations follow the structure of IEC 60364 / IEC61936. Certified competence as per NEC's ESPCS becomes an easy way to secure international employment. THE CEA SAFETY REGULATIONS MADE MANDATORY COMPLIANCE TO NEC 2023. CERTIFIED COMPETENCE AS PER NEC's ESPCS ENSURE SECURE EMPLOYMENT AND CAREER GROWTH IN INDIA.





## **NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY**

**WHO WE ARE:** We are a group of passionate engineering professional working in the field of electrical safety. Our members have decades of experience as electrical inspectorates, electrical designers, safety officers, and engineers in the field of quality and standards.

**VISION:** To make every electrical installation free of accidents such as electrocution and fire due to short circuits and increasing the reliability of the electrical installation, thus contributing to the saving of lives and property and supporting sustainable development.

**MISSION:** We shall strive to achieve our vision by obtaining accredited for product and personnel certification which shall focus on electrical safety by design, manufacturing, installation and maintenance of electrical product & installation through the development of competent and qualified manpower using quality resources including prod processes and procedures.

### Contact

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download scheme documents at <https://www.nfees.info/schemes>