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بروجاكس للتدريب والتطوير  
Projacs Training and Development

# IEEE Standards for Electric Power Systems in Buildings المعايير القياسية العالمية لنظم الطاقة الكهربائية في المباني

29 August – 02 September 2021

Muscat / Oman



ProjacsAcademy.com



## Objectives

This Course is intended to promote the use of sound engineering principles in electrical standards specially IEEE for power systems in buildings. It is hoped that it will alert the design, and contractor engineers to the many problems that can be encountered in designing and executing electrical power systems, starting from basic requirements, calculation methods, execution precautions ending with inspection and testing for all electrical systems like power configuration and estimation, lighting, grounding, and protection. The course will also act as a guide through the myriad of codes, standards, and practices published by the IEEE Standard and other professional associations and governmental bodies. During the course, an intensive investigation of the above-explained subjects will be conducted to the trainees. Upon completion of the course the engineer/technician will be fulfilled and understand the IEEE as a standard for electric power systems in buildings. The course will be conducted through lectures, presentations, and practical examples through the different sessions.

## Who Should Attend?

The course is targeted to Junior and senior engineers and high trained technician who work in Electrical power system installations in buildings, Ones who their work related to approving and accepting electrical installations.

## Course Outline

### Day One

- Project cycle
- Design phases
- Influences on the design process
- Codes and standards
- Load Characteristics
- Voltage Control in Electric Power System
- Voltage Ratings for Utilization Equipment
- Effect of Voltage Variation on Utilization Equipment

- Improvement of Voltage Conditions
- Momentary Voltage Variations - Voltage Dip
- Phase Voltage Unbalance in Three-Phase Systems
- Harmonic Voltages
- Transient Over voltages

### Day Two

- Power Sources and Distribution Systems
- Interrelated Utility and Project Factors That Influence Design
- Electric Utility Metering and Billing
- Transformer Connections
- System Grounding
- Distribution Circuit Arrangements
- Emergency and Standby Power Systems
- Voltage Regulation and Power Factor Correction

### Day Three

- Power Distribution Apparatus
- Transformers - Switchgear and Circuit Breakers – Fuses - Load Transfer Devices Controllers
- Low-Voltage Starters and Controllers
- Multiple-Speed Controllers
- Fire Pump Controllers
- Speed Control of DC Motors
- Speed Control of AC Motors
- Power System Harmonics from Adjustable Speed Motor Controls
- Services Vaults, and Electrical Equipment
- Wiring Systems
- Cable Systems
- Cable Construction
- System Protection and Coordination

- Short-Circuit Calculations
- Selection of Equipment
- Selective Coordination

#### **Day Four**

- Lighting
- Illumination Quality
- Light Sources
- Control of Lighting
- Lighting Maintenance
- Illuminance Calculations
- Elevator Operation
- Communication and Signal System (Telephone – Data – Audio – Video – Fire Alarm)
- Basic safety requirements
- Mandatory requirements
- Protection from electric shock
- Fundamental safety requirements
- Installation and erection
- Building Regulations requirements

#### **Day Five**

- What inspections and tests have to be completed and recorded?
- Sequence of tests
- Protective measures
- Insulation resistance
- Protection against direct and indirect contact
- Protection against direct contact
- Protection against indirect contact

- Additional tests with the supply connected
- Test electrical installations
- Continuity tester
- Insulation resistance tester
- Loop impedance tester
- Prospective fault current tester
- Test lamp or voltage indicator
- Earth electrode resistance

### Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a binder containing a copy of the presentation
- slides and handouts
- Post-assessment

### Program Support

This program is supported by interactive discussions, role-play, and case studies and highlight the techniques available to the participants.

## Schedule

### The course agenda will be as follows:

- Technical Session 08.30-10.00 am
- Coffee Break 10.00-10.15 am
- Technical Session 10.15-12.15 noon
- Coffee Break 12.15-12.45 pm
- Technical Session 12.45-02.30 pm
- Course Ends 02.30 pm

## Course Fees\*

- **2,950USD**

*\*VAT is Excluded If Applicable*

### أهداف البرنامج

يهدف هذا البرنامج الى الأهتمام بإتباع إسس هندسية مرموقة في أعمال التمديدات الكهربائية و كذلك يوجه نظر المهندسين إلى المشاكل المتوقعة عند عمل التصميمات الهندسية لشبكات التمديدات الكهربائية وخاصة للمنشآت الصناعية. ويقوم البرنامج بالتعريف بمعايير أخرى إلى جانب معيار IEEE

### الحضور

ويستهدف البرنامج المبتدئين وكبار المهندسين والفنيين المدربين الذين يعملون في التركيبات الكهربائية في نظام المباني وهم الذين يتعلق عملهم بالموافقة على قبول وتركيب التركيبات الكهربائية.