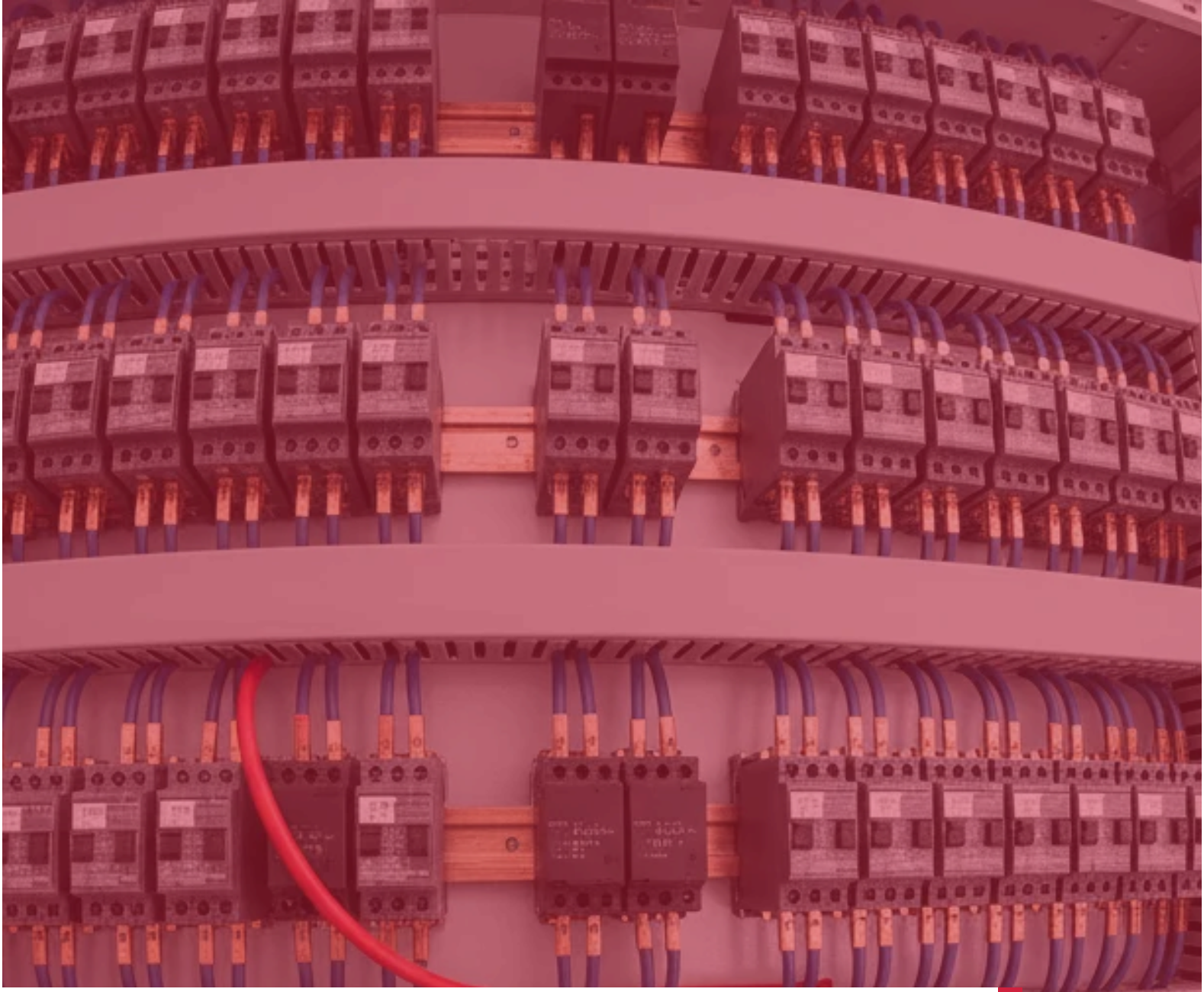
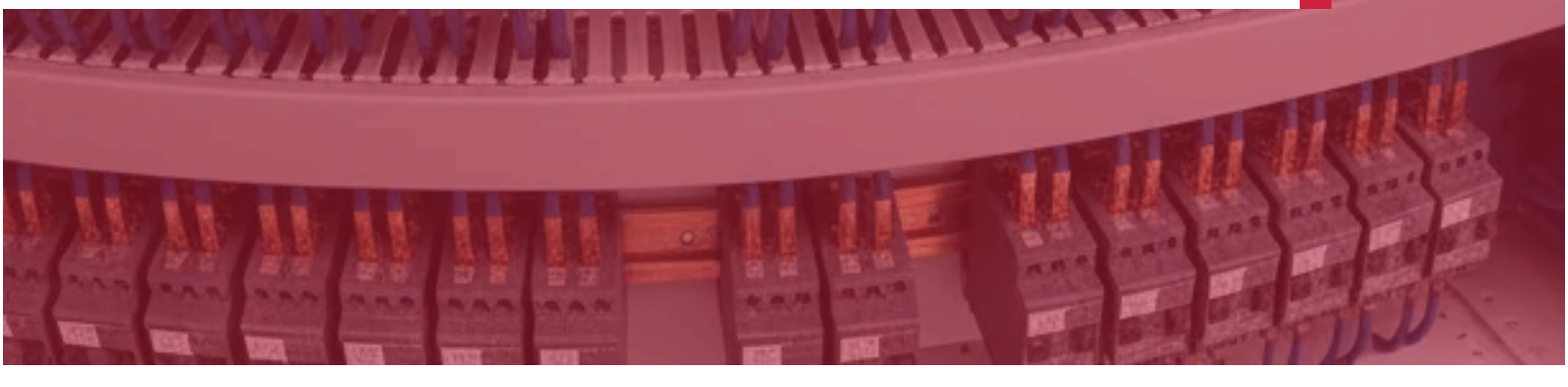


Máster online 100%

Master in Electrical Engineering + 60 ECTS Credits

Structuralia



Máster online 100%

Master in Electrical Engineering + 60 ECTS Credits

Modality
Online

Languages
Español

Duration
1500 hours (60 ECTS)

No Limit
AI Assistant

Does it include practices?
NO

Educational Institutions

Structuralia Engineering eLearning

UNIVERSIDAD NEBRIJA

Summary

The Master in Electrical Engineering is an advanced specialization in the design and calculation of low-voltage electrical installations for residential buildings, aimed at engineering professionals and senior technical personnel who seek to update themselves and master current regulations. This program specializes in the complexity of link installations, from their symbolic representation to the preparation of the required technical documentation. You will learn to rigorously apply the ITC-BT regulations, guaranteeing the safety and efficiency of each project. You will master measurement techniques in electrical installations, which will allow you to verify key parameters and ensure compliance with standards. You will focus on residential electrification, delving into its specific symbology and the precise calculations for circuit sizing. This approach prepares you to approach projects with a technical and strategic vision, optimizing resources and meeting the demands of the sector. You will develop a critical capacity for decision-making in the field of electrical installation design, consolidating your profile as an expert in the field. You will delve into the interpretation of electrical link diagrams, a fundamental skill for any professional who aspires to lead electrification projects in the residential and tertiary fields. The preparation of technical documentation, a fundamental component in the execution and legalization of facilities, will be one of your distinctive

skills upon completion of this master's degree. Thus, you will position yourself as a reference in the practical application of electrical engineering for the building sector.

Agenda

MODULE 1. ELECTRICAL INSTALLATIONS IN HOUSING BUILDINGS

1. DIDACTIC UNIT 1. LINK FACILITIES

1. General power line
2. Characteristics and types of elements
3. Location and assembly of link facilities

2. DIDACTIC UNIT 2. REPRESENTATION AND SYMBOLS OF ELECTRICAL LINK INSTALLATIONS

1. Standardized symbols in electrical connection installations
2. Standardized electrical plans and diagrams
3. Interpretation of electrical diagrams of link facilities:
4. Rules and regulations. ITC-BT-12

3. DIDACTIC UNIT 3. MEASUREMENT IN ELECTRICAL INSTALLATIONS

1. Electrical quantities
2. Electrical resistance of grounding and insulation
3. Fundamental relationships between electrical quantities
4. Measuring instruments
5. Connection procedures
6. Measurement processes

4. DIDACTIC UNIT 4. PREPARATION OF THE DOCUMENTATION OF THE ELECTRICAL LINK INSTALLATIONS

1. Documentation of the facilities ITC-BT-01, ITC-BT-02
2. Requirements and actions of authorized installers ITC-BT-03
3. Documentation and commissioning of ITC-BT-04 facilities
4. Verification and inspections ITC-BT-05
5. Load forecast for the supply of BT. ITC-BT-08, ITC-BT-10

5. DIDACTIC UNIT 5. ELECTRIFICATION INSTALLATIONS IN HOMES AND BUILDINGS

1. Indoor facilities:
2. Installations in homes:
3. Facilities with bathtubs or showers. ITC-BT-27
4. Grounding installations: characteristics and elements. ITC-BT-18
5. Facilities in common areas: characteristics and elements
6. Facility security
7. Protection against overcurrents and overvoltages. ITC-BT-22, ITC-BT-23
8. Overloads
9. Short circuits
10. Protection against direct and indirect contacts. ITC-BT-24
11. Differential switches (sensitivity, disconnection, etc.)

6. DIDACTIC UNIT 6. REPRESENTATION AND SYMBOLS OF ELECTRICAL INSTALLATIONS IN HOMES

1. Standardized symbols in electrical installations
2. Interpretation of electrical diagrams of interior installations and building plans

7. DIDACTIC UNIT 7. CALCULATION IN BT ELECTRICAL INSTALLATIONS OF HOUSING BUILDINGS

1. Degree of electrification and power in homes
2. Total load of buildings preferably intended for housing
3. Circuits, conductor section and voltage drops in homes and connection facilities
4. Maximum allowable currents in conductors
5. Protection elements
6. Dimensions of tubes and pipes
7. Element selection
8. Standard calculation procedures for BT installations

8. DIDACTIC UNIT 8. INSTALLATION OF INDOOR ELECTRICAL INSTALLATIONS IN HOMES AND BUILDINGS

1. Location and assembly of the interior home installation system: tubes and cables, number of circuits and characteristics in the assembly, ground connections, lines and branches, general distribution panel, bathrooms and kitchens, among others
2. Installation in common areas (stair lighting, utility room lighting, security lighting)
3. Technical means and equipment in assembly
4. Rules and regulations

9. DIDACTIC UNIT 9. DIAGNOSIS AND REPAIR OF ELECTRICAL INSTALLATIONS IN HOUSES AND HOUSING BUILDINGS

1. Verification of connections and measurement of their insulation
2. Circuit intensity check
3. Insulation failures and current leakage problems
4. Repair of circuits with overloads
5. Increase in consumption and voltage drop greater than that allowed in the REBT

10. DIDACTIC UNIT 10. REGULATIONS AND TECHNICAL DOCUMENTATION OF ELECTRICAL INSTALLATIONS

1. Technical report of a basic grade installation
2. Electrical installation certificate
3. Project and processing of facilities
4. Completion of verification and inspection reports

MODULE 2. ELECTRICAL INSTALLATIONS IN OFFICE, SHOPPING AND INDUSTRIAL BUILDINGS

1. DIDACTIC UNIT 1. ELECTRIFICATION INSTALLATIONS IN COMMERCIAL BUILDINGS, OFFICES, INDUSTRIES

1. Facility characteristics
2. Element Types

3. Protections
4. Regulations for: Local installations with bathtubs or showers. ITC-BT-27
5. Installations in public places. ITC-BT-28
6. Special lighting. ITC-BT-44
7. Additional instructions for special lighting

2. DIDACTIC UNIT 2. INSTALLATIONS OF PREMISES WITH RISK OF FIRE AND EXPLOSION

1. Installations in premises with risk of fire or explosion. ITC-BT-29 and its associated UNE standards
2. Site classification
3. General classification
4. Classification of the most common locations
5. Protection modes
6. Installation conditions for all hazardous areas
7. Material selection criteria

3. DIDACTIC UNIT 3. INSTALLATION OF PREMISES WITH SPECIAL CHARACTERISTICS

1. Interpretation of norms and regulations referenced in the REBT RD 842/2002 08/02/2002
2. Installations in premises with special characteristics: humid, wet, with risk of corrosion and dusty, among others. ITC-BT-30, ITC-BT-31. ITC-BT-32, ITC-BT-33, ITC-BT-34, ITC-BT-35, ITC-BT-37, ITC-BT-38, ITC-BT-39, ITC-BT-40, ITC-BT-41, ITC-BT-42, ITC-BT-43, ITC-BT-45, ITC-BT-46, ITC-BT-49, ITC-BT-50
3. Installations of service stations, garages and repair shops
4. Installations of small safety voltages. ITC-BT-36
5. Operating rooms and intervention rooms. Facilities for relief feeding. ITC-BT-38
6. Lighting installations
7. Distribution boards
8. Command and protection elements
9. Grounding installations. ITC-BT-18
10. Grounding systems
11. Electrodes
12. Ground resistance
13. Facility security

4. DIDACTIC UNIT 4. MEASUREMENTS AND VERIFICATIONS IN ELECTRICAL INSTALLATIONS

1. Measuring instruments, troubleshooting instruments and network analyzers
2. Electricity tariff, BT models
3. Measurement tests and verifications according to UNE 20460 and ICE 60364.6.61 (continuity of protective conductors, insulation resistance, circuit separation protection, floor and wall resistance, automatic supply disconnection, polarity, electrical performance, electrical resistance and voltage drop)

5. DIDACTIC UNIT 5. INSTALLATION OF INDOOR ELECTRICAL INSTALLATIONS IN COMMERCIAL BUILDINGS, OFFICES, INDUSTRIES AND FOR SPECIAL PURPOSES

1. Location and assembly of embedded, surface, and open installation systems in types of commercial buildings, offices and industries. Circuit separation. ID

2. Pipe installation system: Choice and situation
3. Metallic and non-metallic tubes
4. Protective channels
5. Trays and supports, among others
6. Ground sockets
7. Lines and derivations
8. Distribution boards
9. Preparation, machining and execution of: panels or enclosures, conduits, cables, terminals, splices and connections
10. Media and equipment

6. DIDACTIC UNIT 6. REPAIR OF INDOOR ELECTRICAL INSTALLATIONS IN COMMERCIAL BUILDINGS, OFFICES, INDUSTRIES AND FOR SPECIAL PURPOSES

1. Typical breakdowns in commercial and industrial buildings
2. Symptoms and effects of breakdowns
3. Diagnosis and localization
4. Troubleshooting
5. Reporting

7. DIDACTIC UNIT 7. CALCULATION IN BT ELECTRICAL INSTALLATIONS IN COMMERCIAL BUILDINGS, OFFICES, INDUSTRIES AND FOR SPECIAL PURPOSES

1. Total load corresponding to commercial buildings, offices and industries
2. Load forecast. ITC-BT-10
3. Three-phase or two-phase-single-phase supplies
4. Load balancing
5. Circuits
6. Distribution of electrification in the building
7. Drivers. Sections

8. DIDACTIC UNIT 8. TECHNICAL AND ECONOMIC DOCUMENTATION OF THE FACILITIES

1. Technical and functional characteristics established with the client (within the framework of current regulations, included in the offer or formalized contract, including economic conditions)
2. Establish types and distribution of luminaires, calculating general and focused lighting intensity, according to the type of installation and activity carried out in the premises, using specific software

9. DIDACTIC UNIT 9. COMPLETE TECHNICAL-ADMINISTRATIVE DOCUMENTATION OF THE FACILITIES

1. Calculation of electrical magnitudes according to procedures established in the REBT of an electrical installation for commercial buildings, offices and industries applying the electrotechnical calculation rules
2. Distribution of electrical loads in centers, warehouses or buildings, according to REBT
3. Technical design report
4. Installation certificate
5. Unify scheme
6. Instructions for use and maintenance of equipment and machinery
7. Certificates of completion according to project
8. Collegiate professional visas

9. Construction licenses
10. Requirements and reports required by supplying companies
11. Documentations and regional requirements

MODULE 3. DEVELOPMENT OF LOW VOLTAGE ELECTRICAL NETWORK PROJECTS

1. DIDACTIC UNIT 1. LOW VOLTAGE NETWORK PROJECTS

1. Technical documentation of the project (report, plans, budgets, etc.)
2. Preliminary projects and standard projects
3. Technical design report
4. Administrative documentation
5. Project processing

2. DIDACTIC UNIT 2. LOW VOLTAGE ELECTRICAL NETWORKS

1. Distribution of electrical energy. Distribution systems
2. Aerial and underground networks. Features
3. Drivers. Types, sections, characteristics and applicable regulations
4. Elements of an overhead and underground line. Guys
5. Auxiliary fastening elements (insulators, hardware, among others)
6. Protection and signaling elements
7. ground network
8. Interpretation of topographic plans
9. Network layout. Crossings, parallelisms and proximities (with other power lines, other facilities (water, gas, etc.), roads, among others)
10. Electrical panels. Location. Types of enclosures and degree of protection. Switchgear. ID. Measures against direct contacts. Grounding of the neutral and metal parts
11. Exploitation and operation of the network. Modification of network characteristics. Typical breakdowns and consequences

3. DIDACTIC UNIT 3. SCHEMES AND ELEMENTS OF THE BT NETWORK. REGULATIONS

1. BT Regulations
2. Supply company standards
3. UNE Standards
4. Regional and local regulations
5. Line drawing. Crossings, proximities and parallelisms
6. Types of connections (aerial, underground and mixed)
7. Types of facilities
8. Network elements
9. Development of sketches and plans

4. DIDACTIC UNIT 4. SIZING OF BT NETWORK ELEMENTS

1. Supports, foundations and trenches
2. Conductor sizing
3. Protections
4. Mechanical calculations
5. Complete sketches and plans

5. DIDACTIC UNIT 5. GRAPHIC REPRESENTATION OF BT NETWORKS

1. Standardization of plans. Margins and boxes
2. General distribution network diagram
3. Situation and location. Recommended scales
4. Standardized representation of identifying elements, dimensions, sections, intensities, denominations, etc. Tolerances
5. Layout, location of manholes, frames, supports, etc. Identification of each element. Recommended scales
6. Details schemes and diagrams. Trenches, manholes and covers, electrical panels, supports. Recommended scales
7. Single-line diagrams of electrical panels
8. Application software
9. Plane folding

6. DIDACTIC UNIT 6. BUDGETS FOR THE INSTALLATION OF BT NETWORKS

1. Work unit. Element Identification
2. Measurement of each element of the work, price, amount
3. Decomposed prices. Materials. Labor, indirect costs
4. Standardized scales
5. Preparation of the total cost of the project
6. General budget and by items
7. Summary budget
8. Budget by chapters
9. Budgeting software

7. DIDACTIC UNIT 7. SAFETY AND HEALTH IN BT ELECTRICAL INSTALLATIONS

1. Safety and hygiene regulations
2. Basic health and safety study
3. General rules
4. Process and specific rules of preventive action
5. Most frequent risks during installation (falls, blows, cuts, overexertion, among others)
6. Most frequent risks during connection and commissioning tests (electrocution, burns, fires, etc.)
7. Auxiliary elements specific to the activity
8. Collective protection and signaling systems (nets, railings, fire extinguishers, among others)
9. Individual protection systems (helmets, glasses, boots, belts, etc.)
10. Preparation of risk assessment tables
11. Preparation of risk management tables

MODULE 4. DEVELOPMENT OF HIGH VOLTAGE ELECTRICAL NETWORK PROJECTS

1. DIDACTIC UNIT 1. HIGH VOLTAGE NETWORK PROJECTS

1. Technical documentation of the project (report, plans, budgets, etc.)
2. Preliminary projects and standard projects
3. Administrative documentation
4. Project processing

2. DIDACTIC UNIT 2. HIGH VOLTAGE ELECTRICAL NETWORKS

1. Transportation of electrical energy. Transportation-distribution systems
2. Aerial and underground networks. Features
3. Drivers. Types, sections, characteristics and applicable regulations
4. Elements of an overhead and underground line. Types

5. Auxiliary fastening elements (insulators, hardware, among others)
6. Protection and signaling elements
7. ground network
8. Interpretation of topographic plans
9. Network layout. Crossings, parallelisms and proximities (with other power lines, other facilities (water, gas, etc.), roads, among others
10. Switchgear. Identification. Grounding of the neutral and metal parts
11. Exploitation and operation of the network. Modification of network characteristics. Typical breakdowns and consequences

3. DIDACTIC UNIT 3. SCHEMES AND ELEMENTS OF THE AT NETWORK. REGULATIONS

1. Regulation of AT lines
2. Supply company standards
3. UNE Standards
4. Regional and local regulations
5. Line drawing. Crossings, proximities and parallelisms
6. Types of facilities:
7. Network elements
8. Development of sketches and plans

4. DIDACTIC UNIT 4. SIZING OF NETWORK ELEMENTS IN AT

1. Supports, foundations and trenches:
2. Conductor sizing:
3. Protections:
4. Mechanical calculations:
5. Complete sketches and plans

5. DIDACTIC UNIT 5. GRAPHIC REPRESENTATION OF AT NETWORKS

1. Standardization of plans. Margins and boxes
2. General diagram of the AT network
3. Situation and location. Recommended scales
4. Standardized representation of identifying elements, dimensions, sections, names, etc. Tolerances
5. Layout, location of manholes, supports, etc. Identification of each element. Recommended scales
6. Details, schemes and diagrams. Trenches, manholes and covers, electrical panels, supports. Recommended scales
7. Application software
8. Plane folding

6. DIDACTIC UNIT 6. BUDGETS FOR AN AT ELECTRICAL INSTALLATION

1. Work unit. Element Identification
2. Measurement of each element of the work, price, amount
3. Decomposed prices. Materials. Labor, indirect costs
4. Standardized scales
5. Preparation of the total cost of the project
6. General budget and by items
7. Summary budget

8. Budget by chapters
9. Budgeting software

7. DIDACTIC UNIT 7. RISK PREVENTION MEASURES IN THE INSTALLATION OF HV ELECTRICAL NETWORKS

1. Safety and hygiene regulations
2. Basic health and safety study
3. General rules
4. Process and specific rules of preventive action
5. Most frequent risks during installation (falls, blows, cuts, overexertion, among others)
6. Most frequent risks during connection and commissioning tests (electrocution, burns, fires, etc.)
7. Auxiliary elements specific to the activity
8. Collective protection and signaling systems (nets, railings, fire extinguishers, among others)
9. Individual protection systems (helmets, glasses, boots, belts, etc.)
10. Preparation of risk assessment tables
11. Preparation of risk management tables

MODULE 5. DEVELOPMENT OF ELECTRICAL INSTALLATION PROJECTS IN TRANSFORMATION CENTERS

1. DIDACTIC UNIT 1. TRANSFORMATION CENTER PROJECTS

1. Technical documentation of the project (report, plans, budgets, etc.)
2. Preliminary projects and standard projects
3. Administrative documentation
4. Project processing

2. DIDACTIC UNIT 2. TRANSFORMATION CENTERS

1. Distribution of electrical energy. Distribution systems
2. Considerations common to transformation centers (access location, type, dimensions, degree of protection, among others)
3. Elements of a prefabricated transformation center. Features
4. Elements of a civil works transformation center. Features
5. Power network characteristics
6. Characteristics of the medium voltage switchgear (line, protection, measurement cells, among others)
7. Transformers. Types and characteristic values. Name plate
8. Connections (input, output cables, etc.)
9. Characteristics of various medium and low voltage materials (bridges, types of cables, sections, etc.)
10. Characteristics of the low voltage material (control panels, functional units, among others)
11. Grounding installations. Protective grounding and service grounding. Features
12. Secondary facilities. Fans, hallways, pits, lighting, etc.
13. Safety devices in cells, safety distances
14. Protection and signaling elements. Electrical protections Fire protections. Active systems and passive systems
15. Interpretation of plans
16. Operation and operation of transformation center. Influence of modifying the characteristics of a transformation center. Typical breakdowns and consequences

3. DIDACTIC UNIT 3. SCHEMES AND ELEMENTS OF A TRANSFORMATION CENTER. REGULATIONS

1. Low voltage regulation. Regulation on technical conditions and safety guarantees in power plants, substations and transformation centers
2. Supply company standards
3. UNE Standards
4. Regional and local regulations
5. Types of transformation center (prefabricated, supported, civil works). Features
6. Elements of a transformation center
7. Development of sketches and plans

4. DIDACTIC UNIT 4. SIZING OF THE ELEMENTS OF A TRANSFORMATION CENTER

1. Electric:
2. Grounding sizing:
3. Protections:
4. Complete sketches and plans

5. DIDACTIC UNIT 5. GRAPHIC REPRESENTATION OF A TRANSFORMATION CENTER

1. Standardization of plans. Margins and boxes
2. General diagram of a transformation center
3. Situation and location. Recommended scales
4. Standardized representation of identifying elements, dimensions, sections, intensities, denominations, etc.
5. Tolerances
6. Location of transformers, cells, panels, etc. Identification of each element
7. Recommended scales
8. Details schemes and diagrams
9. Transformers, cells, pits, channels, electrical panels, etc. Recommended scales
10. Single-line diagrams of low voltage panels
11. Application software
12. Plane folding

6. DIDACTIC UNIT 6. BUDGETS OF A TRANSFORMATION CENTER

1. Work unit. Element Identification
2. Measurement of each element of the work, price, amount
3. Decomposed prices. Materials. Labor, indirect costs
4. Standardized scales
5. Preparation of the total cost of the project
6. General budget and by items
7. Summary budget
8. Budget by chapters
9. Budgeting software

7. DIDACTIC UNIT 7. RISK PREVENTION MEASURES IN THE INSTALLATION OF ELECTRICAL NETWORKS

1. Safety and hygiene regulations
2. Basic health and safety study
3. General rules

4. Process and specific rules of preventive action
5. Most frequent risks during installation (falls, blows, cuts, overexertion, among others)
6. Most frequent risks during connection and commissioning tests (electrocution, burns, fires, etc.)
7. Auxiliary elements specific to the activity
8. Collective protection and signaling systems (nets, railings, fire extinguishers, among others)
9. Individual protection systems (helmets, glasses, boots, belts, etc.)
10. Preparation of risk assessment tables
11. Preparation of risk management tables

MODULE 6. INTEGRATED PROJECT MANAGEMENT

1. DIDACTIC UNIT 1. INTRODUCTION TO ISO 21500

1. Previous concepts of normalization and standardization
2. Relationship of the standard with other project management standards: PMBOK, PRINCE2...
3. Introduction to the UNE-ISO 21500:2013 standard
4. Purpose and field of application of the standard
5. History, current context and future of ISO 21500
6. Standard implementation costs
7. Period of validity of the standard

2. DIDACTIC UNIT 2. STRUCTURE OF THE ISO 21500 STANDARD

1. Structure of the ISO 21500 standard
2. Definition of general concepts of the standard
3. Classification of processes into process groups and subject groups
4. Project initiation process group
5. Project Planning Process Group
6. Implementation Process Group
7. Project control and monitoring process group
8. Project Closing Process Group

3. DIDACTIC UNIT 3. SUBJECT GROUP: INTEGRATION

1. Introduction to the subject "Integration"
2. Development of the project charter
3. Develop project plans
4. Direct project tasks
5. Control of project tasks
6. Control changes
7. Project closure
8. Compilation of lessons learned

4. DIDACTIC UNIT 4. SUBJECT GROUPS: INTERESTED PARTIES AND SCOPE

1. Introduction to the subject "Interested Parties"
2. Identify interested parties
3. Manage stakeholders
4. Introduction to the subject "Scope"
5. Define the scope
6. Create the work breakdown structure (WBS)
7. Define the activities
8. Control the range

5. DIDACTIC UNIT 5. SUBJECT GROUP: RESOURCES

1. Introduction to the subject "Resources"
2. Establish the project team
3. Estimate resources
4. Define the project organization
5. Develop the project team
6. Control resources
7. Manage the project team

6. DIDACTIC UNIT 6. SUBJECT GROUPS: TIME AND COST

1. Introduction to the subject "Time"
2. Establish the sequence of activities
3. Estimate the duration of activities
4. Develop the schedule
5. Control the schedule
6. Introduction to the subject "Cost"
7. Estimate costs
8. Develop the budget
9. Control costs

7. DIDACTIC UNIT 7. SUBJECT GROUPS: RISK AND QUALITY

1. Introduction to the subject "Risk"
2. Identify risks
3. Assess the risks
4. Deal with risks
5. Control risks
6. Introduction to the subject "Quality"
7. Plan quality
8. Perform quality assurance
9. Perform quality control

8. DIDACTIC UNIT 8. SUBJECT GROUPS: PROCUREMENTS AND COMMUNICATIONS

1. Introduction to the subject "Acquisitions"
2. Plan acquisitions
3. Select suppliers
4. Manage contracts
5. Introduction to the subject "Communications"
6. Plan communications
7. Distribute the information
8. Manage communication

MODULE 7. ELECTRICAL ENERGY TRANSPORT LINES

1. DIDACTIC UNIT 1. VISION OF A ONE LINE PROJECT

1. Introduction
2. Official execution project
3. Phases of the preparation of a project for the execution of an electrical line
4. Indicative duration of the phases of a power line project

2. DIDACTIC UNIT 2. AIRLINE TECHNOLOGY

1. Introduction
2. Isolation
3. Drivers
4. Supports
5. Hardware
6. Regulation of high voltage lines. Standards

3. DIDACTIC UNIT 3. INSULATED CABLE LINES TECHNOLOGY

1. Introduction
2. Regulations and applicable standards
3. Types of power cables and basic components
4. Grounding systems
5. Accessories
6. Types of installation of insulated cable systems
7. Aerial-underground transition supports
8. Insulated cable tests

4. DIDACTIC UNIT 4. AIRLINE ELECTRICAL CALCULATIONS

1. Introduction
2. Line parameters
3. Line models
4. Insulated cable grounding systems
5. Voltage drop
6. Transport capacity in insulated cables
7. Protection against atmospheric discharges

5. DIDACTIC UNIT 5. AIRLINE MECHANICAL CALCULATIONS

1. Mechanical calculation of conductors
2. Calculation of efforts in overhead line supports
3. Calculation of foundations on overhead line supports
4. Mechanical calculation of a laying block
5. Support calculation

6. DIDACTIC UNIT 6. CONSTRUCTION OF AIRLINES

1. Introduction
2. Organization on site
3. Civil works of supports and accesses
4. Assembly and lifting of supports
5. conductor laying

7. DIDACTIC UNIT 7. CONSTRUCTION OF INSULATED CABLE LINES

1. Introduction
2. History of insulated cable
3. Types of high and very high voltage insulated cables
4. General outline of the construction model
5. civil works

6. Laying
7. Making accessories
8. Post-installation tests

8. DIDACTIC UNIT 8. UNIQUE PROJECTS

1. Unique aspects of projects
2. Real projects

MODULE 8. PROJECT MANAGEMENT AND CONSTRUCTION OF HIGH VOLTAGE ELECTRICAL INFRASTRUCTURES

1. DIDACTIC UNIT 1. PROJECT MANAGEMENT

1. Introduction
2. The project
3. Project definition stage
4. Project organizational structure
5. Planning
6. Project control and monitoring stage
7. Project closure. Completion
8. Execution of a high voltage electrical infrastructure project
9. Research and development projects
10. Reinforcement exercises. aon/aoa networks

2. DIDACTIC UNIT 2. INFRASTRUCTURE FINANCING AND COST ANALYSIS

1. Introduction
2. The circulating capital cycle (cc). The working capital
3. The profit and loss account (cpg)
4. The financial structure and business financing funds
5. The analysis of profitability
6. Control and economic monitoring of projects
7. Types of cash-flows in the evaluation of a project
8. Investment project valuation methods
9. Annex I (not evaluable) Capex control
10. The case of the "usbsecurity" project
11. Annex III (not evaluable) Structured financing of projects or project finance
12. Infrastructure financing

3. DIDACTIC UNIT 3. H.R.H. MANAGEMENT AND RELATIONSHIPS WITH CONTRACTORS AND SUPPLIERS

1. General framework
2. Model of labor relations in the company
3. People management processes
4. Management models and organization models
5. Management of subcontractors
6. Annex I (relative to Spain). The regulatory pyramid in Spain
7. Annex II (relative to Spain). Subcontracting management in Spain
8. Annex III (relative to Spain). Other State Laws and Regulations

4. DIDACTIC UNIT 4. ENVIRONMENTAL MANAGEMENT

1. Introduction
2. Environmental impacts caused by the construction of substations and electrical lines connecting substations
3. Preventive and corrective measures
4. Waste management
5. Annex I (relative to Spain). Infrastructure planning and its environmental impact in Spain

5. DIDACTIC UNIT 5. ELECTRICAL RISK AND ITS SAFETY AND HEALTH IMPLICATIONS IN CONSTRUCTION WORKS

1. Electrical risk
2. Application to construction works
3. Annex I (relative to Spain). Health and safety regulations in Spain
4. Annex II (relative to Spain). Application of Spanish health and safety regulations to construction works
5. Annex III (relative to Spain). Legal analysis of the legal responsibilities of the Spanish system. Responsible subjects

6. DIDACTIC UNIT 6. QUALITY MANAGEMENT IN PROJECTS AND WORKS

1. Quality: concepts and historical evolution
2. Quality management systems
3. Process management
4. Quality management in projects and works
5. A practical example: control and supervision in the construction phase of a high voltage electrical installation

7. DIDACTIC UNIT 7. TENDERING, CONTRACTING AND AWARDING

1. Presentation
2. Supplier qualification
3. Phase I: identification of needs, generation of prior documentation and actions to be carried out before the tender
4. Phase II: request for offer, analysis and evaluation of the same
5. Phase III: award criteria, formalization of the award and contract
6. Particular cases
7. Annex I. Practical example of a letter requesting an offer
8. Annex II. Support schemes: types of competitions

MODULE 9. FINAL PROJECT

Qualification

University Degree in Master of Lifelong Training in Electrical Engineering issued by the Antonio de Nebrija University with 60 ECTS University Credits. Teachings not leading to obtaining an official qualification

Objectives

- • Design link electrification systems for residential buildings, applying efficiency and safety criteria. • Interpret and generate symbology and link diagrams, ensuring correct technical representation. • Apply current technical regulations, including ITC• BT regulations, in the design of electrical installations. • Size and calculate low voltage circuits in buildings, guaranteeing their functionality and safety. • Perform precise electrical measurements on systems, evaluating their compliance with technical standards. • Prepare the complete technical and administrative documentation for the legalization of electrical systems. • Support technical decisions in the selection of components and configuration of low voltage systems.

What does it prepare you for?

This program prepares you to lead the design and configuration of electrical installations in residential buildings, applying advanced calculation and regulatory criteria. You will acquire the skills to design and configure low-voltage electrical installations, guaranteeing the safety and efficiency of the systems. You will develop the ability to accurately interpret symbology and link diagrams, essential for any electrical systems project. You will master the application of the ITC-BT regulations, guaranteeing security and legal compliance in each phase of the process. You will perform electrical and insulation measurements with rigor, ensuring the quality and optimal performance of the systems. In addition, you will prepare all the required technical documentation, from plans to descriptive reports, consolidating your role as a specialist in low voltage electrical design. It will allow you to make strategic decisions in the planning and execution of residential electrification systems, optimizing their efficiency and reliability.

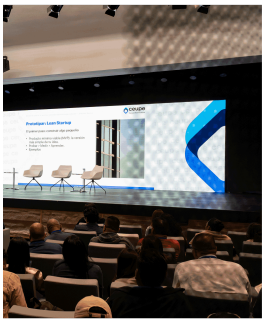
Who is it addressed to?

This program is designed for electrical engineering professionals and senior technical personnel seeking in-depth specialization in the design and documentation of electrical installations. If you work in the electrical sector and want to update your knowledge of current regulations and calculations for the electrification of residential buildings, this program offers you the essential tools. It is ideal for profiles aimed at mastering the application of ITC-BT regulations and the preparation of detailed building electrification projects, ensuring the safety and efficiency of low voltage installations.

Professional Outings

- Specialization in electrical engineering for residential buildings positions you in highly demanding and responsible roles within the building and consulting sector. You will position yourself as an Electrical Installations Engineer in architecture and engineering studies, leading the design and sizing of residential electrification systems. You will develop skills for Electrical Design Consultant roles, advising on low voltage projects and the rigorous application of ITC-BT regulations. You will be a specialist in Electrical Technical Documentation, in charge of preparing and verifying plans, reports and certifications in accordance with applicable standards. This profile is highly valued for roles as Technical Manager of Residential Electrification Projects, guaranteeing the safety, efficiency and compliance of each installation from its conception to its commissioning.







Live Madrid

Live the International Week

As an additional complement to your training, you can be part of the SIM: Week International in Madrid. A unique meeting that brings together students from all over the world. For seven days you can live an academic and cultural experience in the heart of Europe, culminating with the graduation ceremony in Madrid.

- Conferences and workshops with international experts
- Visits to companies and reference organizations
- Networking with students from different countries
- Cultural activities and discovery of Madrid
- graduation ceremony

Structural

Structuralia is a leading educational institution in postgraduate and highly specialized online training, focused on the fields of engineering, architecture, construction, energy, technology and digital transformation.

Founded in 2001 with a strong industrial DNA, the result of collaboration between large companies in the sector and the Universitat Politècnica de Catalunya (UPC), for more than 25 years we have accompanied technical professionals in their academic and professional development through practical, flexible training aligned with the reality of the labor market.

Our training proposal connects advanced technical knowledge, real employability and international projection, acting as key support in the professional evolution of those seeking to specialize, grow professionally and generate impact in their sector, with a firm commitment to the democratization of access to technical excellence.



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+20 years

Experience in the training sector



5 stars

QS ranking in online education

EDUCA EDTECH
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When you enroll in a course or master's degree, you will get a free subscription to MyLXP while your training lasts. You will have access to more than 400 key courses (soft skills, languages, digital skills, etc.) and other surprises. Sign up and see how MyLXP improves your learning.

EDUCA LXP Methodology

The comprehensive tailored online education experience

EDUCA LXP is more than a methodology, it is a completely educational experience personalized thanks to all the possibilities offered by artificial intelligence. Now the content adapts to you, your needs and preferences, while offering you access to updated and practical content that really makes a difference in the labor market.

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Meet PHIA, your personalized learning assistant

Use all the possibilities of artificial intelligence to get the most out of it match to your training

EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development and research.

With the experience accumulated over more than 20 years, we have perfected our learning platform EDUCA LXP (Learning Experience Platform), the basis of our educational methodology, which provides students with online training practical and meaningful.



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