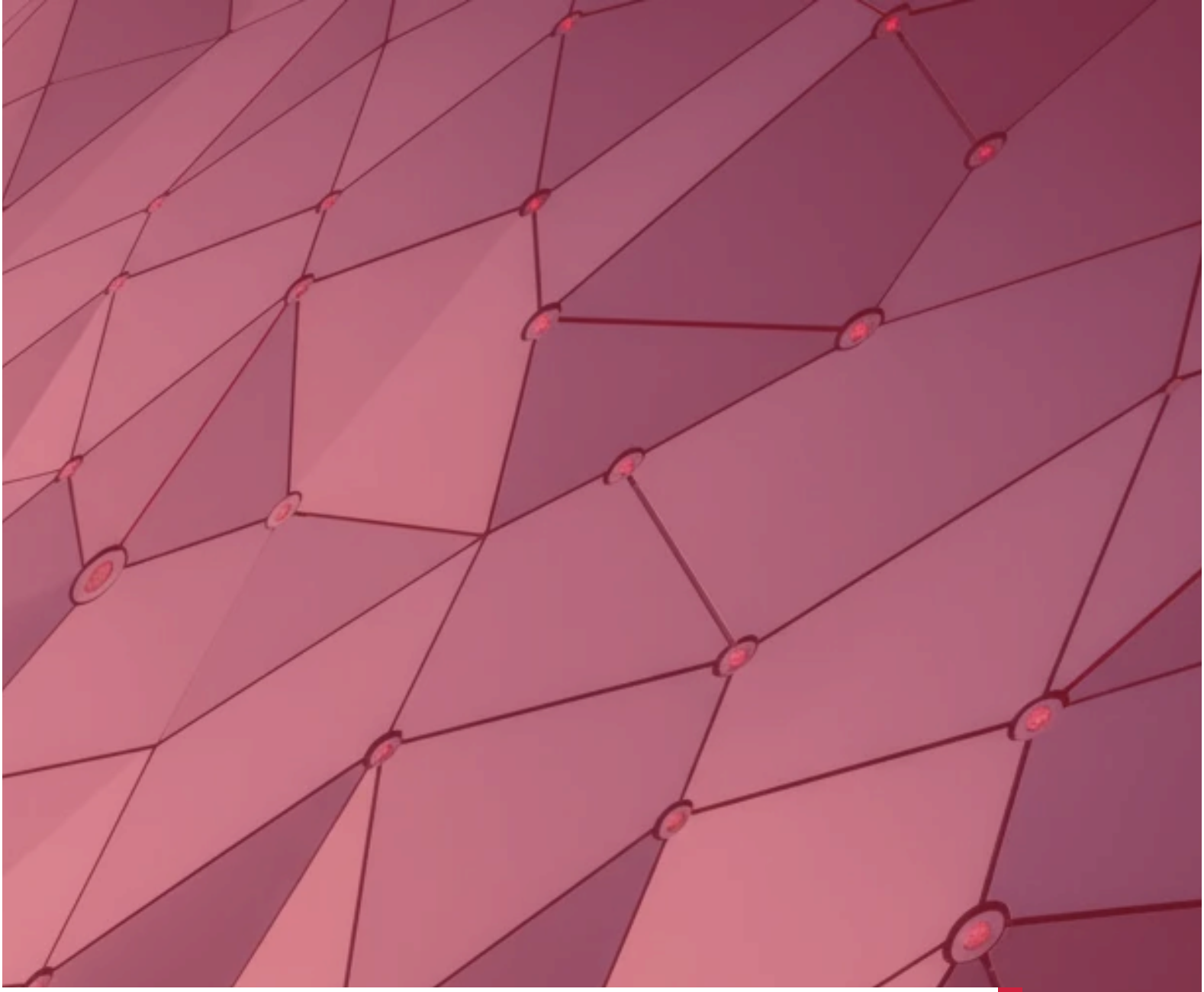


Máster online 100%

Master in Intelligent Buildings: Smart Buildings + 60 ECTS Credits

Structuralia

Máster online 100%

Master in Intelligent Buildings: Smart Buildings + 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

This program delves into the digital transformation of buildings, guiding you in the conceptualization and deployment of intelligent scenarios. You will learn to optimize operational efficiency and significantly reduce energy consumption, maximizing the use of space and innovation in the offer of services to users. The approach ranges from Smart Hospitals and Smart Offices to Smart Airports, Smart Campuses and Smart Cities, elevating the experience in various contexts. You will delve into the fundamentals of a smart building, from the creation of technological scenarios to the advanced management of the control center, where the capture and integration of information is key. You will explore the exploitation of data for building automation and environmental monitoring, delving into predictability and the application of artificial intelligence to optimize its operation. The master's degree addresses specific business cases, such as Smart Offices, Hospitals and Smart Nursing Homes, providing you with an applied vision to implement solutions that directly impact the satisfaction of employees, patients or citizens. You will consolidate your ability to design and

execute smart infrastructure projects that redefine the interaction between people and spaces, promoting innovation and sustainability in the sector.

Agenda

MODULE 1. BASICS OF SMART BUILDING

1. DIDACTIC UNIT 1. Smart Building concept: creation of intelligent scenarios based on technology

1. Objectives of a Smart Building
2. Actors and skills
3. Three large families of common systems: energy, security and auxiliary systems
4. Specific systems depending on the use of the building
5. The need for standardization. UNE Standards

2. DIDACTIC UNIT 2. BUILDING CONTROL CENTER: INFORMATION CAPTURE AND INTEGRATION

1. Location systems for people and assets. Service customization
2. Technological options around location
3. IoT sensors: capturing what happens in the building
4. Information processing to generate intelligent scenarios
5. Control Center Implementation

3. DIDACTIC UNIT 3. EXPLOITATION OF INFORMATION. BUILDING AUTOMATION AND MONITORING

1. Building automation
2. Smart Building Mobile App
3. Unified Control Portal
4. Simulation. Digital Twin
5. Smart Building Monitoring and Root Cause Analysis

4. DIDACTIC UNIT 4. PREDICTIBILITY. ARTIFICIAL INTELLIGENCE WITHIN SMART BUILDING

1. Machine Learning as the basis of predictability
2. How to implement a Machine Learning project inside a building
3. Prediction-based maintenance of building infrastructure
4. Facility Management services supported by predictions
5. Other Artificial Intelligence techniques at the service of Smart Building: Biometric systems, Natural language processing and Robotics

MODULE 2. BUSINESS APPLICATIONS OF SMART BUILDING

1. DIDACTIC UNIT 1. SMART OFFICES

1. Smart office concept. Smart employee services
2. Efficient management of shared spaces
3. Tenant services. Relationship with property
4. Getting to the office: Smart parking and access control
5. Intelligent scenarios for access to the Smart office

2. DIDACTIC UNIT 2. INTELLIGENT HOSPITALS AND RESIDENCES FOR THE SENIORS

1. Integration of clinical and general systems to streamline patient care
2. Mobile applications and location solutions at the service of the Smart hospital
3. Smart ICU
4. Senior residences
5. The extension of the smart hospital. Telecare

3. DIDACTIC UNIT 3. TRANSPORTATION INFRASTRUCTURES, HOTELS AND SMART SCHOOLS

1. Smart airport: Efficiency in operations and infrastructure control
2. Smart airport: Passenger services
3. smartport
4. Smart hotels
5. Smart colleges and campuses

4. DIDACTIC UNIT 4. SHOPPING CENTERS AND SMART AGRICULTURAL FARMS

1. Smart shopping centers, control of spaces and infrastructure
2. Smart shopping centers. Automation, capacity control and prediction
3. Smart livestock farms. smart farm
4. Smart farms. Business applications
5. Smart farms. Technological challenges. The importance of communications networks

MODULE 3. CITIES IN THE ANTHROPOCENE: SUSTAINABILITY AND URBAN ECOLOGY

1. DIDACTIC UNIT 1. ANTHROPOCENE AND GLOBAL CHANGE

1. Anthropocene and global change
2. The great acceleration
3. Changes in land use and loss of biodiversity
4. A hyperconnected planet
5. Climate change and cities in the Anthropocene

2. DIDACTIC UNIT 2. URBAN ECOLOGY AND URBAN GREEN SPACES

1. The city as an ecosystem
2. Green spaces and urban green infrastructure
3. The city in the territory
4. Protected natural spaces in urban environments
5. Ecological and socioecological connectivity

3. DIDACTIC UNIT 3. ECOSYSTEM SERVICES FOR DECISION MAKING

1. Ecosystem services for decision making
2. Fundamental concepts of ecology linked to ecosystem services
3. Ecosystem services evaluation methodologies (I)
4. Ecosystem services evaluation methodologies (II)
5. Quantifying demand for ecosystem services

4. DIDACTIC UNIT 4. SOLUTIONS BASED ON NATURE AND MULTIFUNCTIONAL STRATEGIES

1. Fundamental concepts in nature-based solutions
2. Ecological restoration and renaturalization strategies
3. Nature in cities
4. Multifunctional strategies for adaptation to climate change
5. Circular economy in cities

MODULE 4. ENERGY IN BUILDING (ER)

1. DIDACTIC UNIT 1. THE ENERGY CONTEXT

1. Introduction
2. The international energy context
3. The Spanish energy context
4. European regulatory framework in building energy
5. USA regulatory framework, ASHRAE standards

2. DIDACTIC UNIT 2. NEWLY CONSTRUCTED BUILDINGS. CTE AND CEE

1. New building. Introduction to CTE and energy certification
2. The CTE. Basic habitability requirements
3. The CTE. Basic energy saving requirements (The RITE is seen in systems)
4. The energy certification
5. The recognized documents for energy certification and the regulatory relationship

3. DIDACTIC UNIT 3. EXISTING BUILDINGS

1. Existing buildings. The energy audit
2. Energy audit. Phase 1: Analysis of the current situation
3. Energy audit. Phase 2: Proposals and economic analysis
4. European regulations. Series UNE-EN_16247-1,2,3,4:2012
5. ASHRAE Energy Audit II

4. DIDACTIC UNIT 4. ENERGY CERTIFICATION IN EXISTING BUILDINGS

1. Existing buildings. The energy certification
2. The CE3X program. Definition of the envelope
3. The CE3X program. Systems definition
4. The CE3X program. Results and improvement measures
5. The CE3X program. Case study

MODULE 5. SMART BIM

1. DIDACTIC UNIT 1. INSTALLATIONS OF A SMART BUILDING (I)

1. Implementation of facilities in BIM environments
2. MEP and systems configuration
3. MEP families and connectors
4. Electricity modeling
5. Lighting modeling

2. DIDACTIC UNIT 2. INSTALLATIONS OF A SMART BUILDING (II)

1. Spaces and areas
2. HVAC modeling
3. Plumbing modeling
4. Control and automation systems
5. Systems control

3. DIDACTIC UNIT 3. PERFORMANCE BUILDINGS

1. Sustainability and BIM Methodology
2. Energy simulation
3. Environment simulation
4. LCA and Energy
5. BIM as an information process

4. DIDACTIC UNIT 4. SMART BIM

1. Facility Management
2. Computer systems
3. Digital Twin and BIM
4. Energy management in the Digital Twin
5. Smart Building and BIM

MODULE 6. CREATING A SMART BUILDING. INFRASTRUCTURE DEPLOYMENT

1. DIDACTIC UNIT 1. IOT DEVICES

1. Lighting devices (light sources, luminaires, sockets, switches, etc.)
2. Devices for HVAC systems (heating, air conditioning and ventilation)
3. Security devices (access control, people counters, smart locker, smart parking...)
4. Fire prevention and extinguishing systems. Video surveillance system
5. Telecommunications systems (data network, voice network, video, IPTV and digital signage)

2. DIDACTIC UNIT 2. CONTROLLERS

1. Sensors, nodes, collectors and Gateway
2. Systems based on wSAN networks (Wireless sensor and actuator networks)
3. Interconnection of networks through IP
4. Internet Protocol (IPV6)
5. Web services and applications for intelligent systems

3. DIDACTIC UNIT 3. FIXED AND MOBILE COMMUNICATION NETWORKS. THE DIDACTIC OPPORTUNITY BEHIND 5G

1. Main concepts of fixed and mobile communication networks
2. Guided streaming media
3. Short-range, low-power networks
4. Low Power Wide Area Networks
5. What is 5G? The Educational Opportunities of 5G

4. DIDACTIC UNIT 4. HARDWARE INFRASTRUCTURE. CLOUD AND ON PREMISE OPTIONS

1. Hardware infrastructure
2. Integration into Building Management System (BMS)
3. Cloud and On Premise Options
4. Integration platform. Open Source, Private and Mixed Options
5. Web portals and mobile applications focused on the building user

MODULE 7. INTERNET SECURITY OF THINGS. CYBERSECURITY

1. DIDACTIC UNIT 1. WHAT IS IOT?

1. Introduction to the Internet of Things (IoT)
2. History of IoT
3. IoT SWOT
4. Areas and sectors
5. IoT Security and Privacy

2. DIDACTIC UNIT 2. IOT CHALLENGES

1. Introduction to IoT architecture
2. Layer models
3. Specific architectures
4. openfog
5. IoT development

3. DIDACTIC UNIT 3. IOT SECURITY IN CLOUD PROVIDERS

1. IoT and Big data
2. IoT applications
3. Analytics
4. IoT analytics applications
5. Data aggregation and integration

4. DIDACTIC UNIT 4. FRAMEWORKS IN IOT SECURITY

1. Sensors
2. Communication protocols for sensors, controllers and interfaces
3. Communication protocols
4. Attacks and preventive measures
5. Tools and case studies

MODULE 8. INTRODUCTION TO BIG DATA

1. DIDACTIC UNIT 1. DATA IN COMPANIES

1. Data information
2. Knowledge wisdom
3. Data Management (I)
4. Data Management (II)
5. Corporate performance management
6. Databases

2. DIDACTIC UNIT 2. OF BUSINESS INTELLIGENCE TO BIG DATA

1. Business intelligence

2. Datawarehousing
3. big data
4. HadoopSpark

3. DIDACTIC UNIT 3. BIG DATA TECHNOLOGICAL ARCHITECTURES

1. Hadoop ecosystem (I)
2. Hadoop ecosystem (II)
3. Hadoop ecosystem (III)
4. Spark Ecosystem
5. Installation and configuration of Big Data architectures

4. DIDACTIC UNIT 4. BIG DATA ANALYTICS

1. Analytics
2. Main algorithms (I)
3. Main algorithms (II)
4. Machine Learning and Deep Learning
5. internet of things

MODULE 9. MANAGEMENT OF A SMART BUILDING PROJECT

1. DIDACTIC UNIT 1. PROJECT PLANNING. PREPARATION OF SOFTWARE COMPONENTS

1. Project Planning: preparation of the software components necessary for integration with access control and parking management systems
2. Project Planning: preparation of the software components necessary for integration with the air conditioning, lighting and billing systems
3. Project Planning: preparation of operational modules that do not require integration with third-party systems
4. Planning of user interfaces and pre-production tests
5. Planning tool. Microsoft Project

2. DIDACTIC UNIT 2. PROJECT PLANNING: INSTALLATION OF SMART BUILDING SOLUTIONS WITHIN THE BUILDING

1. Installation of physical infrastructure
2. Third party review of physical infrastructure
3. Deployment of the software platform. Basic components, access control and parking
4. Deployment of the software platform. Air conditioning, billing and user services
5. Onboarding

3. DIDACTIC UNIT 3. PROJECT BUDGETING

1. Budgeting of the necessary physical infrastructures
2. Base infrastructure budgeting: IoT sensors
3. Base infrastructure budgeting: networks and hardware
4. Budgeting of the base software applications for smart building management
5. Budgeting of access control software applications, air conditioning and lighting management. Installation maintenance service budget

4. DIDACTIC UNIT 4. PROJECT GOVERNANCE

1. Project team: management, business experts and software profiles
2. Project team: installers, information exploiters and support teams
3. Support service management
4. Project Monitoring
5. Project risk management"

MODULE 10. TFM. MASTER IN SMART BUILDINGS: SMART BUILDINGS

Qualification

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

Objectives

- • Lead the conceptualization and deployment of connected environments for the digital evolution of buildings. • Design strategies to improve operational efficiency and reduce energy consumption in buildings. • Integrate data capture and analysis systems for the automation and advanced supervision of intelligent structures. • Implement artificial intelligence solutions for predictive and proactive management in interconnected spaces. • Optimize the use of space and the creation of new services for users in various types of properties. • Evaluate the viability and impact of specific business models in Hospitals, Offices and Residences with advanced technology. • Make strategic decisions for the evolution of transportation infrastructures, campuses, shopping centers and cities towards intelligent management models. • Develop a global vision for innovation and sustainability in the management of technologically advanced real estate assets.

What does it prepare you for?

This program prepares you to lead technological evolution in the building sector, developing your ability to design and implement Smart Building scenarios that optimize the operational and energy efficiency of any property. You will develop a strategic vision to integrate advanced technologies, such as Artificial Intelligence, in building management, from control centers to monitoring and automation systems, applying IoT in buildings. You will learn to identify and deploy specific business cases for various types of smart buildings, such as hospitals, offices or campuses, ensuring the optimization of space use and the creation of new services for users. You will make decisions based on the exploitation of data, transforming the management of real estate assets towards predictive and proactive models. This Master trains you in the integration of intelligent systems for the optimization of resources and services. Thus, you will consolidate your ability to direct high-impact projects, providing added value through technological innovation.

Who is it addressed to?

Aimed at professionals in the building sector, such as Facility Managers, who seek to equip themselves with advanced tools to add strategic value to property management and optimize energy efficiency. Also to experts in Information Technology (IT) who want to apply their knowledge in software, hardware and telecommunications to the digital transformation of buildings, creating more efficient and connected environments through automation. If you work in the field of construction and aspire to strengthen your professional career, leading innovation and space optimization projects through the implementation of intelligent solutions, this program offers you the specialization you need.

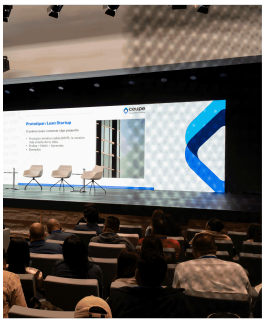
Official Character

This training is not included within the scope of official regulated training (Early Childhood Education, Primary Education, Secondary Education, Official Vocational Training FP, Baccalaureate, University Degree, Master University Officer and Doctorate). It is therefore a complementary and/or specialization training, aimed at the acquisition of certain competencies, skills or aptitudes of a professional nature, which can be assessed as merit in job boards and/or competitive examinations, always within the section of Complementary Training and/or Continuous Training. It is always essential to review the specific grading requirements of the specific public job boards to which we wish to apply.

Professional Outings

- Specialization in the management of smart buildings positions you to assume highly responsible roles in the digital transformation of the sector. You will be able to work as a Project Manager of Smart Buildings, leading the planning and execution of projects that integrate technology to optimize the performance of buildings. Also as a Senior Consultant in Smart Building and Smart Cities, where you will design intelligent scenarios for public and private spaces, providing innovative solutions. You will strengthen your profile as a Facility Manager, providing you with a strategic vision and digital tools for advanced asset management. In addition, you will be able to access positions such as Infrastructure Integration Engineer, key in the interconnection of systems and technologies within intelligent environments. These roles will allow you to drive operational efficiency and value creation in various types of buildings, from hospitals to university campuses.







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.



+350.000

Students have gone through our virtual classrooms



+20 years

Experience in the training sector



5 stars

QS ranking in online education

EDUCA EDTECH
Group

Educa Edtech GROUP

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.

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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.

Flexibility

100% online learning adapted to your schedule: study from any device wherever, whenever and however you want.

Personalization

Contents and training itineraries adapted to your needs, thanks to AI.

Innovation

Constantly evolving technological developments driven by AI through the Learning Experience Platform.

Artificial intelligence

Discover PHIA, your learning assistant that will help you every step of the way.

Teaching support

Human empathy and academic guidance from a specialized teaching team.

Educational Experience

Didactic approach oriented to work by competencies, which favors practical and meaningful learning.

MY LXP

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, competencies digital, etc.) and other surprises. Sign up and see how MyLXP improves your learning.

Meet PHIA, your personalized learning assistant

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

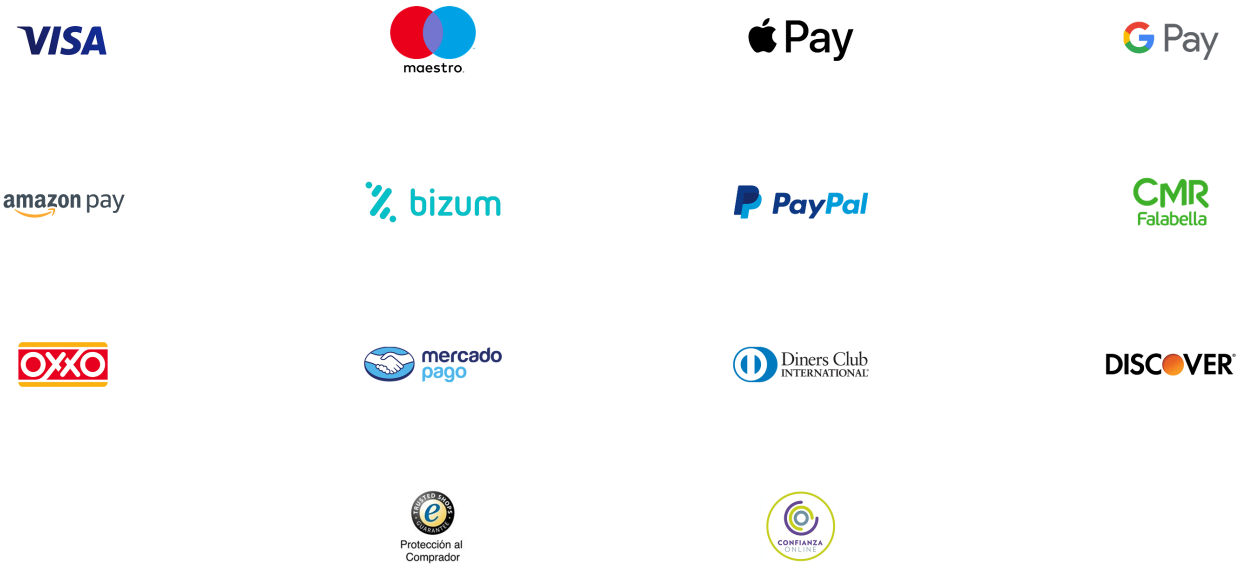
EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development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



Discover all the payment facilities

We adapt to all international payment methods.



Funding and scholarships

Finance your course or master's degree and enjoy the available scholarships. Contact our expert team to know which one best suits your profile.

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Alumni Scholarship

15%
Scholarship recommended

20%
Functional Diversity Scholarship

20%
Unemployment scholarship

15%
GROUP Scholarship

20%
Scholarship for Professionals, Healthcare, members

15%
Entrepreneurship Scholarship

20%
Large Family Scholarship