

Máster online 100%

Master in Smart Cities Management + 60 ECTS Credits

Structuralia



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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 Smart Cities Management is an advanced specialization in data science and urban innovation, designed for urban planning and technology professionals who aspire to lead the transformation of urban environments. This program delves into the most innovative urban analysis, planning and management practices, essential for building more humane, efficient and sustainable environments. Addresses the critical intersection between urban planning and urban Information and Communication Technologies (ICT), exploring how Big Data in urban planning and applied Geographic Information Systems (GIS) redefine essential infrastructure and services. You will acquire the ability to apply advanced methodologies to address the challenges inherent in the development of smart cities, from mobility optimization and energy management to urban ecology and smart building. With a strategic perspective, this master's degree equips you to direct the evolution of urban spaces, integrating sustainability, resilience and inclusion in each phase of the project. It is a rigorous training, designed for those seeking not only to understand current

paradigms, but also to actively influence the future configuration of urban management on a global scale.

Agenda

MODULE 1. SMART AND SUSTAINABLE CITIES

1. DIDACTIC UNIT 1. SUSTAINABLE CITIES

1. Introduction to sustainability
2. The 2030 agenda and the SDGs
3. Challenges of the city of the future
4. Prosperous and sustainable cities
5. Success factors for sustainable and smart cities

2. DIDACTIC UNIT 2. SMART CITIES

1. urban design
2. Digitization of cities
3. Urban energy transition
4. Urban mobility
5. circular cities

3. DIDACTIC UNIT 3. RESILIENT CITIES

1. Urban resilience
2. Mitigation and adaptation to climate change
3. Nature-based solutions
4. Healthy cities
5. Peri-urban spaces

4. DIDACTIC UNIT 4. INCLUSIVE CITIES

1. Social challenges
2. Ensuring social cohesion
3. Integrated urban governance
4. Institutional leadership
5. Creation of networks and partnership

MODULE 2. DATA AND FOUNDATIONS OF GEOGRAPHICAL INFORMATION TECHNOLOGIES APPLIED TO SMART CITIES

1. DIDACTIC UNIT 1. INTRODUCTION TO THE QGIS PROJECT, DESKTOP, LAYER FORMATS AND PROPERTIES

1. Introduction to QGIS project, desktop and layers panel
2. Navigation, attributes and selection tools
3. Geographic information formats
4. Layer properties (font and symbology)
5. Layer properties (tags, fields, metadata, and actions)

2. DIDACTIC UNIT 2. INTRODUCTION TO THE PROCESSING OF ALPHANUMERIC DATA. ADD TABLES AND CONNECTION TO DATABASES

1. Alphanumeric data and tables
2. Tools associated with tables. Join and link tables
3. Introduction, creation of maps and properties
4. Add items
5. Tools and map export

3. DIDACTIC UNIT 3. EDITING, SETUP AND EDITING PROCEDURES

1. Editing, configuration and editing procedures
2. Editing tools
3. Add or modify objects
4. Creating new layers and modifying tables
5. Basic geoprocessing

4. DIDACTIC UNIT 4. COORDINATE SYSTEMS

1. Coordinate systems
2. Changing coordinate systems
3. Manage and install plugins
4. Most used plugins
5. Other accessories of interest

MODULE 3. MANAGEMENT OF SMART CITIES DEVELOPMENT INITIATIVES

1. DIDACTIC UNIT 1. MANAGEMENT APPROACH FOR SMART CITIES

1. Vision of a project
2. Value-based requirements prioritization
3. "People" Technique
4. Estimation with minimal information
5. Backlog generation: user stories

2. DIDACTIC UNIT 2. PLANNING HORIZONS

1. Applicability for Smart Cities and roadmap projects
2. Project maps for Smart Cities
3. Using the project map
4. Change management
5. Time, cost and people

3. DIDACTIC UNIT 3. PROJECT EXECUTION

1. Work management tool: Kanban design
2. Management areas according to the agile approach
3. Running iterations
4. Implementation monitoring
5. Metrics and continuous improvement

4. DIDACTIC UNIT 4. GOOD PRACTICES AND GOOD AGILE IDEAS

1. Information radiators
2. Speed, timebox and process adjustment
3. Management approach focused on digital transformation
4. Datafication as a pillar of agile digital transformation

5. Working mode proposal

MODULE 4. SPATIAL DATA FOR URBAN PROJECTS

1. DIDACTIC UNIT 1. SPATIAL DATA AND INDICATORS FOR THE MANAGEMENT AND WRITING OF PROJECTS IN SMART CITIES

1. Smart Cities and spatial data
2. Population and demographic indicators
3. Socioeconomic indicators
4. Housing, land and endowments indicators
5. Good practices for urban projects

2. DIDACTIC UNIT 2. SPATIAL DATA INFRASTRUCTURE AND DATA SOURCES FOR PROJECTS IN SMART CITIES

1. Spatial data infrastructures
2. IDE, cadastres and geoportals
3. Third party data sources
4. Cartographic data sources
5. Thematic maps for urban projects

3. DIDACTIC UNIT 3. DATA ANALYSIS, VISUALIZATION AND COMMUNICATION TOOLS FOR PROJECTS

1. Advanced Thematic Maps
2. Not only maps but also graphics
3. Interactive visualization tools
4. satellite images
5. Field work and generation of own data

4. DIDACTIC UNIT 4. TRENDS

1. Sources of information on trends
2. Digital twins and GIS and BIM integration
3. Social networks and mobile phones
4. Big Data and Small Data, sensors and the Internet of Things (IoT)
5. Artificial Intelligence (AI) in the geospatial field

MODULE 5. ENERGY AND CITY: ENERGY TRANSITION AND SMART GRIDS

1. DIDACTIC UNIT 1. ENERGY AND ENERGY TRANSITION

1. Energy and energy consumption
2. Introduction to the energy system and energy sustainability
3. reMODULES and technology
4. Impacts of the energy transition
5. Energy efficiency

2. DIDACTIC UNIT 2. ENERGY EFFICIENCY

1. Smart buildings (I)
2. Smart buildings (II) and electric vehicles
3. Implications of energy efficiency project management (I)

4. Implications of energy efficiency project management (II)
5. Support and data necessary for its management, good practices and keys to success

3. DIDACTIC UNIT 3. NEW GENERATION AND DISTRIBUTION SYSTEMS

1. Electrical supply system
2. Smart Grids, new generation and distribution systems (I)
3. Smart Grids, new generation and distribution systems (II)
4. Telecommunications in Smart Grids (I)
5. Telecommunications in the Smart Grids (II)

4. DIDACTIC UNIT 4. SMART GRID MANAGEMENT

1. Data on the Smart Grid (I)
2. Data on the Smart Grid (II)
3. Implication of Smart Grids project management (I)
4. Implication of Smart Grids project management (II)
5. Regulations, financing and success stories in Smart Grids projects

MODULE 6. TECHNOLOGICAL INTEGRATION OF MOBILITY

1. DIDACTIC UNIT 1. TRANSIT TOWARDS TECHNOLOGICAL AND ENERGY EFFICIENCY:

1. Polluting emissions and the impact of the transportation sector
2. Reference environmental regulations
3. Analysis and usefulness of life cycles. Green Ncap Initiatives
4. Didactic Challenges and Opportunities of New Technological Developments
5. Alternative fuels

2. DIDACTIC UNIT 2. SMART CITY & SMART MOBILITY

1. From the digital city to smart cities
2. Smart Cities
3. The power of data in transportation planning
4. Intelligent traffic and public transport management
5. Other smart technologies

3. DIDACTIC UNIT 3. MOBILITY AS ASERVICE

1. MaaS and the new mobility
2. Objectives, advantages, drawbacks and challenges of MaaS
3. MaaS in the urban mobility planning process
4. MaaS system governance
5. Real cases of MaaS system

4. DIDACTIC UNIT 4. TECHNOLOGICAL INNOVATIONS IN MOBILITY

1. Advanced data analytics
2. Civic technologies
3. Shared mobility
4. autonomous vehicle
5. The city of the future

MODULE 7. 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 8. CO-GOVERNANCE AND PARTICIPATION IN THE SMART CITY

1. DIDACTIC UNIT 1. THE CHANGE OF URBAN PARADIGM IN THE SMART CITY

1. Basic notions of demographics
2. Basic notions of sociology
3. Mutation of the urban and its new functional scale
4. Urban complexity and administrative cooperation
5. Participatory culture in the Smart City

2. DIDACTIC UNIT 2. TRANSPARENCY AND GOOD GOVERNMENT IN THE SMART CITY

1. The cycle of urban public policies
2. Legal security and simplification of processes in the Smart City
3. Transparency portals
4. The urban observatories

5. Universal accessibility to Smart City governance

3. DIDACTIC UNIT 3. CITIZEN PARTICIPATION IN THE SMART CITY

1. Methodology and design of participatory processes
2. Typology of participation processes
3. Citizen awareness campaigns
4. Participation forums with focus groups
5. Open workshops and socio-community intervention

4. DIDACTIC UNIT 4. PARTICIPATORY CO-GOVERNANCE IN THE SMART CITY

1. Participatory budgets in the Smart City
2. Citizen participation in urban planning
3. Perspectives of diversity in citizen participation
4. Sectoral multilevel governance
5. Comprehensive participatory co-governance

MODULE 9. INNOVATIVE PRACTICES IN SMART CITIES THROUGH SPATIAL DATA

1. DIDACTIC UNIT 1. SPATIAL DATA AND CITY PROJECTS

1. Cities and spatial data (I)
2. Cities and spatial data (II)
3. City projects through spatial data and ICT
4. Large-scale Smart City initiatives: smart territories and tourist destinations
5. Smart City initiatives at the local level: urban renewal and 15-minute City

2. DIDACTIC UNIT 2. SMART AND SUSTAINABLE BUILDING

1. Data in the world of construction applied to Smart Cities
2. Circular buildings. Materials and sustainability
3. Energy efficiency
4. Renewable energies
5. Energy Didactic Communities

3. DIDACTIC UNIT 3. SPATIAL DATA AND URBAN ECOSYSTEMS

1. Urban green infrastructures
2. Urban pollution control
3. Heat island effect
4. Carbon footprint calculation
5. Locating asbestos on roofs thanks to artificial intelligence

4. DIDACTIC UNIT 4. SMART AND SUSTAINABLE MOBILITY

1. Sustainable mobility for the future
2. Efficient mobility (I)
3. Efficient mobility (II)
4. Pedestrians at the center of mobility
5. Safe cities

MODULE 10. TFM. MASTER IN SMART CITIES MANAGEMENT

Qualification

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

Objectives

- • Lead the integration of information and communication technologies in urban planning, optimizing the management of infrastructure and services. • Design innovative strategies for the development of smart urban environments, considering their social, economic and environmental impact. • Manage complex urban projects, from conception to implementation, coordinating specialized multidisciplinary teams. • Evaluate the potential of geospatial data and big data analysis to optimize decision making in urban contexts. • Integrate principles of sustainability, resilience and inclusion in the design and operation of advanced urban ecosystems. • Base strategic decisions on data analysis to improve the efficiency and habitability of cities. • Implement advanced technological solutions to address challenges in mobility, energy and buildings in the urban environment.

What does it prepare you for?

This program prepares you to lead the transformation of urban environments, providing you with the necessary skills to integrate data science and urban innovation in the management of smart cities. You will learn to design strategies that address the challenges of mobility, ecology and energy, using information technologies and big data to build more sustainable, intelligent, resilient and inclusive cities. The Master in Smart Cities Management trains urban planning professionals in the application of geographic information tools for resource optimization. You will develop the ability to evaluate the impact of technological solutions on urban planning, making informed decisions to optimize resources and improve quality of life. You will manage complex projects, from conceptualization to scale implementation, applying geographic information tools such as QGIS for the analysis and processing of alphanumeric data, which will allow you to drive significant change in urban planning.

Who is it addressed to?

Aimed at professionals in the urban planning and management sector, including urban planners, architects and civil engineers, as well as technological profiles with a marked interest in the development of cities. If you are looking to complement your career with an analytical and comprehensive vision of the smart cities phenomenon, this program offers you the tools to do so. It is ideal for you if you work in urban project management and want to integrate urban technologies and big data into your strategies, coordinating specialized technical teams to promote innovation in the urban environment.

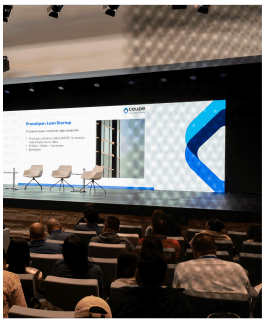
Official Character

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

- The specialization in smart city management strategically positions you to assume highly responsible roles in the public and private sectors. You will be able to lead multidisciplinary teams as Smart Cities Project Director, where you will design and implement innovative solutions that transform the urban environment. You will become a Senior Consultant in Sustainable Urban Planning, advising administrations and companies on the integration of geographic information technologies and data analysis for the development of resilient and inclusive infrastructures. You will also be able to work as Head of Urban Technological Innovation, managing the application of new sources of information and tools such as QGIS to optimize decision making in the management of urban services. Your strategic vision and your ability to coordinate the development of technological solutions will allow you to drive the evolution towards more efficient and humane cities.







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.

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.

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

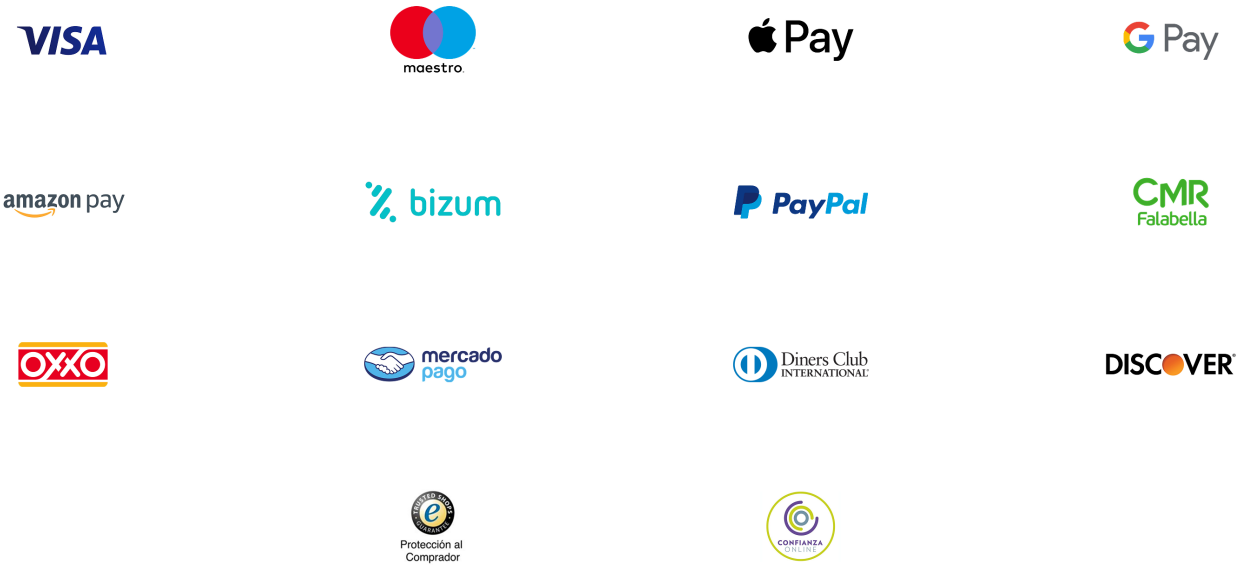
EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development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