

Máster online 100%

Master in BIM applied to Civil Engineering + 60 ECTS Credits

Structuralia

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Master in BIM applied to Civil 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 BIM applied to Civil Engineering is the strategic specialization for professionals in the Construction and Civil Engineering sector who seek to master the BIM methodology and its procedures. This program addresses the transformation of the sector, where the adoption of the BIM methodology is crucial, but presents challenges in its implementation. This program delves into the essence of BIM, transcending the mere tool to focus on the critical procedures that guarantee effective integration and correct implementation in civil engineering projects. Throughout this master's degree, you will master everything from the introduction to the BIM methodology and the understanding of the ISO 19650 standard, to the strategic implementation of BIM in companies and advanced data collection using point clouds. You will delve into the design and modeling of specific infrastructures using Revit, an essential skill for creating accurate 3D models and early identification of potential problems. Additionally, you will equip yourself with the skills for BIM project management and interoperability, understanding the key requirements that define success in collaborative and tendering environments. This comprehensive approach prepares you to lead the digital evolution, ensuring that your BIM mastery is not only limited to technology, but encompasses the global vision

of processes and people, essential elements for successful adoption in any civil engineering project, both in the design and construction phases.

Agenda

MODULE 1. INTRODUCTION AND BIM REGULATIONS

1. DIDACTIC UNIT 1. INTRODUCTION TO BIM METHODOLOGY

1. Deficiencies of the AECO sector
2. What BIM is and what it is not
3. Benefits of BIM for different agents
4. Basic BIM terminology
5. OpenBIM concept

2. DIDACTIC UNIT 2. WHAT IT IS AND WHO IT AFFECTS ISO 19650

1. The ISO 19650 series of standards
2. Information requirements
3. BIM execution plan. B.E.P.
4. Production and delivery of information. Introduction to CDE
5. Implementation and application of ISO 19650 in a project

MODULE 2. BIM IMPLEMENTATION AND DATA COLLECTION IN THE CONSTRUCTION SECTOR

1. DIDACTIC UNIT 1. BIM IMPLEMENTATION IN COMPANIES

1. Introduction
2. Where to start?
3. Initial audit
4. Change management
5. BIM implementation plan

2. DIDACTIC UNIT 2. DATA TAKING. POINT CLOUD

1. Introduction to the point cloud
2. Field work. Scanning
3. I work in an office. Processed (I)
4. I work in an office. Processed (II)
5. Visualization

MODULE 3. DESIGN AND MODELING OF SPECIFIC INFRASTRUCTURES

1. DIDACTIC UNIT 1. REVIT (I)

1. Introduction to the Revit interface
2. Project configuration. Wall modeling. Topography
3. Modeling of architectural elements
4. Curtain walls, ramps, stairs and railings
5. Project coordinates, in-situ modeling and modeling with masses

2. DIDACTIC UNIT 2. REVIT (II)

1. Creating views, 3D views, tours, elevations, view templates
2. Creation of sections, details, floors, rooms and areas
3. Planning tables, labels, solar study and furniture
4. Renders and images
5. Assembly of plans

3. DIDACTIC UNIT 3. REVIT (III)

1. Import and export
2. Introduction to structural modeling in Revit
3. Collaborative work
4. Process by phases of a project
5. Design options

4. DIDACTIC UNIT 4. REVIT (IV)

1. Project information
2. Shared and global parameters
3. Classification systems
4. BIM Interoperability Tools
5. CObie

MODULE 4. MANAGEMENT AND INTEROPERABILITY OF BIM PROJECTS

1. DIDACTIC UNIT 1. CLIENT BIM REQUIREMENTS. PROJECT MANAGEMENT

1. BIM requirements: AEC sector productivity and level of development
2. BIM documents: EIR, style book, BIM manual
3. Information management: quality and processes
4. Standardization: classification systems
5. Open formats

2. DIDACTIC UNIT 2. COLLABORATIVE WORK WITH OPEN FORMATS

1. Factors for a good collaborative BIM work system
2. Servers
3. BIM project organization: central models and linked projects
4. Collaborative practice with Revit (I)
5. Collaborative practice with Revit (II)

MODULE 5. MEP MODELING, CALCULATION AND INTEROPERABILITY

1. DIDACTIC UNIT 1. REVIT MEP. MODELING

1. Initial configuration of the BIM model of facilities and introduction to the implementation of systems in the BIM model and systems navigator
2. Introduction and modeling of plumbing installation
3. Introduction and modeling of the air conditioning installation
4. Introduction and modeling of the electricity installation
5. Fabrication parts and planning tables (measurements)

2. DIDACTIC UNIT 2. REVIT MEP. FAMILIES

1. Introduction to MEP families

2. MEP family creation procedure (I)
3. MEP family creation procedure (II)
4. MEP family creation procedure (III)
5. MEP family in Revit project

3. DIDACTIC UNIT 3. REVIT MEP. CALCULATIONS

1. Introduction to calculation and analysis with Revit MEP
2. Ventilation and air conditioning calculations. Duct networks
3. Air conditioning calculation. Pipe networks
4. Plumbing calculation (cold water and DHW)
5. Analysis of electrical panels

4. DIDACTIC UNIT 4. MEP INTEROPERABILITY

1. Revit interoperability with installation calculation software
2. Interoperability between Revit and CYPECAD MEP
3. Interoperability between Revit and Caneco BIM
4. Interoperability between Revit and DIALux evo
5. Interoperability between Revit and Tekton

MODULE 6. MODELING, CALCULATION AND INTEROPERABILITY OF STRUCTURES

1. DIDACTIC UNIT 1. SUBSTRUCTURE MODELING

1. Introduction to Revit Structures
2. Shoes
3. Piles
4. Working with wall foundations
5. Foundation slabs

2. DIDACTIC UNIT 2. SUPERSTRUCTURE MODELING

1. Structural columns
2. Structural walls
3. Forged
4. Stairs
5. Roofs and trusses

3. DIDACTIC UNIT 3. CALCULATION BASIS

1. Structural analytical automation
2. Loads
3. Boundary conditions
4. Associate physical and analytical elements
5. Analytical links

4. DIDACTIC UNIT 4. PROJECT DOCUMENTATION AND INTEROPERABILITY

1. Creating details
2. Data extraction and plans
3. Export to IFC
4. Structural IFC File Mapping
5. Converting IFC to native Revit elements

MODULE 7. COMMON DATA ENVIRONMENT. CDE

1. DIDACTIC UNIT 1. DALUX CDE

1. Basics
2. BIM Viewer
3. Data structure
4. Working with Dalux CDE
5. Communications and approvals

2. DIDACTIC UNIT 2. DALUX FIELD

1. Basic concepts of BIM in Construction
2. Communications on Site
3. Checklists
4. Inspection Plans
5. Meeting Minutes and Measurements

MODULE 8. OPEN BIM. BIM EXECUTION PLAN

1. DIDACTIC UNIT 1. NAVISWORKS MANAGEMENT

1. Introduction to Navisworks Manage
2. Display Options and Viewpoints
3. Search for elements and sets
4. Appearance Profiler and Clash Detection (I)
5. Appearance Profiler and Clash Detection (II)

2. DIDACTIC UNIT 2. BIM EXECUTION PLAN (BEP). STRUCTURE

1. Introduction to BEP (BIM Execution Plan)
2. General contract information
3. BIM Objectives and Uses
4. Organization of BIM models and collaboration
5. Deliverables, resources, quality control and processes

MODULE 9. PREDESIGN OF LINEAR INFRASTRUCTURES

1. DIDACTIC UNIT 1. INFRAWORKS (I)

1. InfraWorks
2. Model Generator
3. Model creation (I)
4. Model creation (II)
5. Model creation (III)

2. DIDACTIC UNIT 2. INFRAWORKS (II)

1. Planning roads
2. Design proposals
3. Composite roads
4. Decorations, views and exports
5. Storyboards

MODULE 10. DESIGN AND MODELING OF LINEAR INFRASTRUCTURES

1. DIDACTIC UNIT 1. BASIC CONCEPTS AND PROJECT START

1. Features of Civil 3D as BIM Software
2. Civil 3D interface
3. Country Kit Download
4. Collaborative work with Civil 3D
5. Smart objects

2. DIDACTIC UNIT 2. TOPOGRAPHY AND EARTH MOVEMENT

1. Working with topography: Surfaces
2. Grading tools
3. 3D modeling of earthworks
4. 3D modeling of rafts
5. 3D solids of earth movements and BIM Model

3. DIDACTIC UNIT 3. INFRASTRUCTURE MODELING (I)

1. Composition of an infrastructure model
2. Plant design and modeling
3. Cants
4. Longitudinal terrain profile
5. Viewing the profile and grade of the infrastructure

4. DIDACTIC UNIT 4. INFRASTRUCTURE MODELING (II)

1. Design and modeling of cross sections
2. Introduction to Subassembly Composser
3. Three-dimensional composition: Linear work
4. Particular actions: Bridges and Intersections
5. BIM model

MODULE 11. BUDGETS AND CERTIFICATIONS

1. DIDACTIC UNIT 1. PRESTO

1. Presto: definitions and interface
2. Chapters, subchapters and items
3. Measurements: calculation of quantities
4. Prices, price bases and classifications
5. Export and reporting options

2. DIDACTIC UNIT 2. PRESTO IFC

1. Concepts and workflow
2. IFC Model
3. Presto IFC: Open- IFC
4. Cost- IFC
5. Cost-IFC: Measurements

3. DIDACTIC UNIT 3. PREST. BUDGETS

1. Multiple measurement criteria
2. Calculated amount
3. Price references
4. Organize chapters
5. Deliverables

4. DIDACTIC UNIT 4. PLANNING AND WORK

1. Temporal or technical planning
2. Activities and tasks
3. Precedences and simulations
4. economic planning
5. Certifications

MODULE 12. BIM FOR CONSTRUCTION PLANNING

1. DIDACTIC UNIT 1. 4D PLANNING.

1. The Work Breakdown Structure (WBS).
2. Activity codes, resources and performance rules.
3. Costs and monitor the progress of tasks.
4. Model import and basic 4D linking.
5. Advanced 4D linking.

2. DIDACTIC UNIT 2. SECURITY PLANNING, 4D ANIMATION AND CONTROL OF PROJECT PROGRESS.

1. Use of equipment and 3D tours.
2. Security planning.
3. 4D animation.
4. Synchronize models and programming.
5. User field graphs and 4D reports.

MODULE 13. BIM. PRESENTATION OF CIVIL WORKS PROJECTS AND INTRODUCTION TO MANAGEMENT AND MAINTENANCE WITH BIM MODELS

1. DIDACTIC UNIT 1. INTRODUCTION TO LUMION

1. Interface, navigation and import of models
2. Materiality and environment
3. Content Library and Layers
4. Infographics
5. Videos

2. DIDACTIC UNIT 2. BIM APPLIED TO MANAGEMENT AND MAINTENANCE

1. Introduction to Facility Management
2. BIM in Facility Management
3. Introduction to ISO 119650 - 3
4. Introduction to the As-Built model as a connection between operation and maintenance
5. Practical cases

MODULE 14. TFM. MASTER BIM APPLIED TO CIVIL ENGINEERING

Qualification

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

Objectives

- • You will integrate a strategic vision of the BIM application in civil engineering projects, covering all its phases. • You will master BIM tools and software for linear and specific works, guaranteeing interoperability between platforms. • You will design and implement advanced BIM adoption processes for efficient management in organizations in the sector. • You will analyze and apply the international regulatory framework, including ISO 19650, and bidding procedures for projects with a BIM approach. • You will manage the implementation of BIM systems in companies, identifying needs and developing transition strategies. • You will evaluate and apply advanced data collection techniques, such as point cloud capture, to generate accurate digital models. • You will model and design specific infrastructures with solvency, using tools such as Revit for detailed digital representations. • You will lead the coordination of BIM projects, establishing clear requirements and optimizing interoperability for seamless collaboration.

What does it prepare you for?

This Master in BIM applied to Civil Engineering prepares you to lead the digital transformation of the sector, equipping you with the skills for effective BIM implementation. You will learn to design strategies for adopting the BIM methodology, integrating people, processes and technology to optimize project execution. You will manage interoperability between various tools, such as Revit, and define the essential BIM Requirements for any phase of the life cycle of an infrastructure. You will evaluate the impact of current regulations, such as ISO 19650, on the bidding and execution processes. You will make strategic decisions based on precise 3D models, identifying and mitigating potential risks before they materialize on site. You will develop a global vision that will allow you to lead multidisciplinary teams for high-performance civil engineering project management. The Master in BIM applied to Civil Engineering trains professionals and managers in the strategic implementation of BIM to optimize the execution of infrastructure projects.

Who is it addressed to?

Aimed at professionals, technicians and managers in the Construction and Civil Engineering sector who seek to specialize or update their knowledge in the BIM methodology. If you are a Civil, Canal and Port Engineer, Public Works Engineer, Civil Engineer or any other technical or higher engineer, and you want to master the BIM tools and procedures for correct implementation in your projects, this master's degree offers you the specialization you need. It guides you if you already work in the sector and are interested in delving into the management of infrastructure projects and the digitalization of construction, providing you with the strategic and technical vision necessary to advance your career.

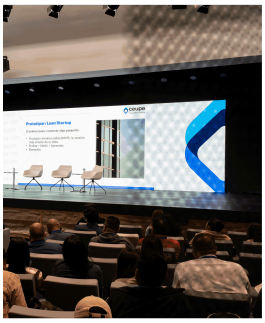
Official Character

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 BIM applied to Civil Engineering positions you for highly responsible roles in the infrastructure sector, transforming the management and execution of works. You will be able to lead the integration of advanced methodologies, managing teams and processes to optimize the complete life cycle of projects. You will assume positions as BIM Manager or BIM Coordinator in large construction and engineering companies, directing the implementation of the ISO 19650 standard and ensuring interoperability between design and management tools. You can also work as a BIM Consultant specialized in optimizing workflows and technological adoption in organizations, or as a Senior Specialist in BIM Infrastructure Modeling using platforms such as Revit for the development of complex projects. Your profile will be key in defining BIM Requirements and supervising the quality of the models, providing a fundamental strategic vision in making critical decisions in the sector.







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

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Artificial intelligence

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

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Human empathy and academic guidance from a specialized teaching team.

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

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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

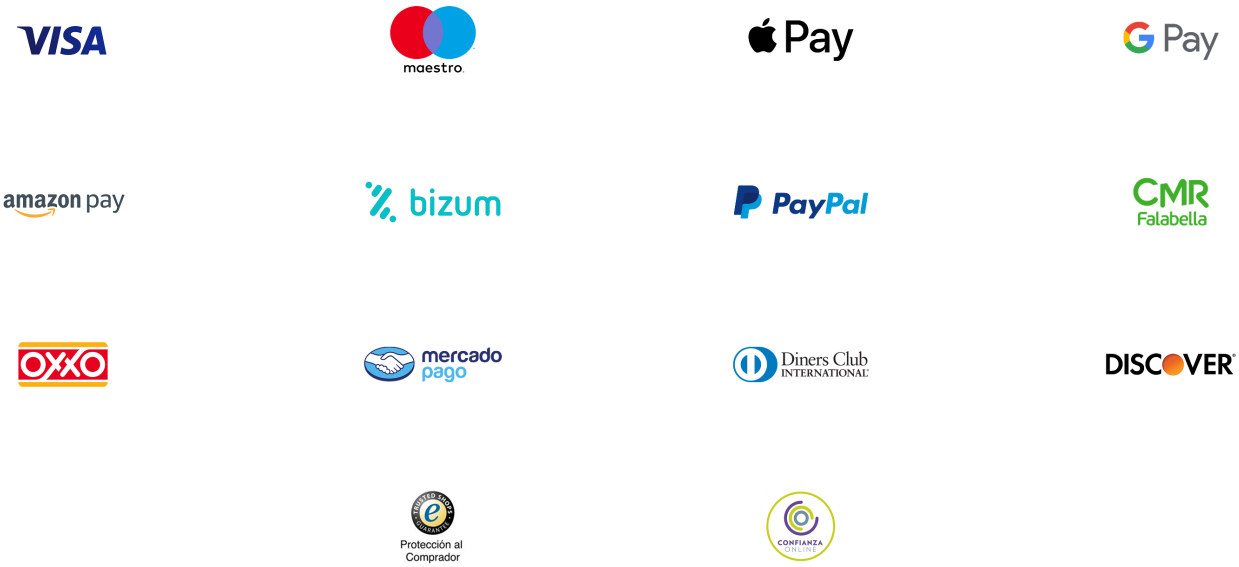
EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development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

25%
Alumni Scholarship

15%
Scholarship recommended

20%
Functional Diversity Scholarship

20%
Unemployment scholarship

15%
GROUP Scholarship

20%
Scholarship for Professionals, Healthcare, members

15%
Entrepreneurship Scholarship

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Large Family Scholarship