

Máster online 100%

Advanced BIM Master in Design and Execution of Linear Works + 60 ECTS Credits

Structuralia

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Advanced BIM Master in Design and Execution of Linear Works + 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 Advanced BIM Master in Design and Execution of Linear Works is a strategic specialization for civil engineering professionals who seek to update and deepen their knowledge in digital construction methodologies and virtual modeling. This program addresses the technological evolution that is redefining the infrastructure sector, where Digital Construction (VDC) and the BIM methodology are essential for competitiveness and operational efficiency. You will specialize in the integration of BIM throughout all phases of the life cycle of an infrastructure, from initial conception to delivery and maintenance. You will master the application of international regulations such as ISO 19650, crucial for BIM information management in complex collaborative environments. You will develop advanced skills in key software, including Civil3D, for modeling and data management in linear BIM projects. You will learn to establish BIM-GIS interoperability workflows and use point clouds to create BIM models, optimizing decision making and resolving technical challenges. This master's degree prepares you to lead the digital transformation in transportation, hydraulic and port

projects, ensuring precise execution and highly efficient project management, consolidating your role as a reference in the digitalization of infrastructure.

Agenda

MODULE 1. BIM. BIM REGULATIONS. BIM TERMINOLOGY. BIM USES FOR LINEAR INFRASTRUCTURES. (ISO 19650)

1. DIDACTIC UNIT 1. UNE-EN ISO 19650 STANDARDS AND BIM TERMINOLOGY.

1. Information Containers according to regulations.
2. Types of Models. Simple Models. Federated Models.
3. Digital Construction Elements. Classifications.
4. Levels of detail. Construction Information Levels.
5. Parameterization of BIM Models.

2. DIDACTIC UNIT 2. BIM DIMENSION AND COMMON DATA ENVIRONMENT.

1. PIM models for design. I use 3D.
2. AIM models. I use 4D, I use 5D and I use 7D.
3. Definition. States of collaborative work.
4. Coding of models and documentation.
5. Structuring of the EDC areas. Computer tools.

MODULE 2. BIM. BIM TENDER. CUSTOMER REQUIREMENTS. BIM EXECUTION PLANS FOR LINEAR INFRASTRUCTURES

1. DIDACTIC UNIT 1. BIM TENDER. CUSTOMER REQUIREMENTS.

1. Legislative and regulatory context.
2. Tender documents for project drafting and execution of linear works.
3. Uses of models. Levels of information and detail. Codings.
4. Deliverables. Organization of the model.
5. ReMODULES. Information management. Quality and processes.

2. DIDACTIC UNIT 2. BIM USES FOR CIVIL INFRASTRUCTURES AND BIM EXECUTION PLANS.

1. Verification of the conceptual design. Work planning and budget.
2. Economic control of work. Certifications. Asset Management.
3. Goals. Milestones. Organization of the model. BIM processes.
4. Information Development Plan (MIDP).
5. Deliverables. Task Development Program (TIDP).

MODULE 3. BIM. BIM - GIS INTEROPERABILITY. POINT CLOUDS FOR BIM MODELS

1. DIDACTIC UNIT 1. GIS AND IDE.

1. Geographic information systems (I).
2. Geographic information systems (II).
3. Working with Metadata.
4. Spatial Data Infrastructure (SDI).
5. Geoservices.

2. DIDACTIC UNIT 2. POINT CLOUDS.

1. Point clouds. Point cloud data on the web.
2. Models from images with ReCap Photo. Model generation with ReCap Photo.
3. Models from images with ReCap Pro. Model generation with ReCap Pro.
4. Point clouds with Civil 3D.
5. Point clouds with InfraWorks.

3. DIDACTIC UNIT 3. PRELIMINARY PROJECTS (I).

1. GIS in Civil 3D.
2. GIS in InfraWorks.
3. Working with Geoservices.
4. Data from a preliminary project for tenders.

4. DIDACTIC UNIT 4. PRELIMINARY PROJECTS (II).

1. Preliminary draft for tenders (I).
2. Preliminary draft for tenders (II).
3. Preliminary project for tenders (III).
4. Customize the model, presentations and videos.
5. Virtual reality.

MODULE 4. BIM. URBANIZATIONS. INTERSECTIONS. ROUTES AND URBAN SERVICES NETWORKS

1. DIDACTIC UNIT 1. THE BIM PROJECT OF URBANIZATION WORKS.

1. The urbanization.
2. Model structuring.
3. Plan street design. Alignments.
4. Elevation street design. Design grade.
5. Parametric sections.

2. DIDACTIC UNIT 2. BIM DESIGN OF INTERSECTIONS.

1. Types of intersections.
2. T-intersections (I).
3. T-intersections (II).
4. T-intersections (III).
5. Cross intersections.

3. DIDACTIC UNIT 3. BIM DESIGN OF GALLORIES.

1. Manual method. elements of the gazebo.
2. General method. linear work of the roundabout.
3. General method. linear work of branches and geometry adjustments.
4. Automatic method. introduction to the roundabout wizard.
5. Automatic method. linear work of the roundabout.

4. DIDACTIC UNIT 4. BIM MODEL OF PIPING NETWORKS.

1. Tools for pipe networks.
2. Elements of pipe networks.

3. Plan layout.
4. Elevation layout.
5. Ditches.

MODULE 5. BIM. ADVANCED DESIGN OF COMPLEX PARAMETRIC TYPE SECTIONS FOR ROADS AND RAILWAYS

1. DIDACTIC UNIT 1. ELEMENTS OF GEOMETRY

1. The SAC interface
2. Basic geometry elements (I)
3. Basic geometry elements (II)
4. Advanced geometry elements (I)
5. Advanced geometry elements (II)

2. DIDACTIC UNIT 2. CODE ORGANIZATION AND FIRST STEPS

1. Organizers, conditionals and lists
2. Definition of parameters and variables
3. SAC in Civil 3D
4. Lane design
5. Shoulder design

3. DIDACTIC UNIT 3. DESIGN OF MULTIPROJECT SECTIONS

1. ditch design
2. Generics and circular sections
3. tunnel design
4. Slope design
5. Transitions

4. DIDACTIC UNIT 4. DESIGN OF COMPLEX SECTIONS

1. channel design
2. Highway type section
3. Clearing
4. Explanation section

MODULE 6. BIM. DESIGN OF SIGNALING ELEMENTS, FACILITIES AND FURNITURE FOR TRANSPORTATION INFRASTRUCTURES. MULTI-VIEW BLOCKS

1. DIDACTIC UNIT 1. GENERATION OF POINT ELEMENTS.

1. Generation of parametric families in Revit. Modeling tool.
2. Application of type/exemplar variability through the creation of geometric parameters.
3. Application of materials to modeling elements.
4. Basic vertical signage considerations. Insertion points and foundations.
5. Basic considerations about horizontal signage.

2. DIDACTIC UNIT 2. INTEGRATION OF SPECIFIC ELEMENTS IN MODELS.

1. Export to Civil 3D.
2. Creation of multiview blocks.
3. Positioning of elements.

4. Representation of elements in plan, profile and section.
5. Generation of Property sets.

MODULE 7. BIM. ADVANCED ROAD DESIGN. LINKS WITH HIGHWAY EXIT/ENTRANCE LANES

1. DIDACTIC UNIT 1. REGULATIONS AND VIADUCTS.

1. Regulations (I).
2. Regulations (II).
3. Modeling of spill cones (I).
4. Modeling of spill cones (II).
5. Modeling of spill cones (III).

2. DIDACTIC UNIT 2. BIM AND INTEROPERABILITY.

1. Property sets (I).
2. Property sets (II).
3. Revit Interoperability - Civil 3d (I).
4. Revit Interoperability - Civil 3D (II).

3. DIDACTIC UNIT 3. DESIGNS OF HIGHWAYS AND LINK LANES (I).

1. Highways (I).
2. Highways (II).
3. Highways (III).
4. Direct branch (I).
5. Direct branch (II).
6. Direct branch (III).

4. DIDACTIC UNIT 4. DESIGNS OF HIGHWAYS AND LINK LANES (II).

1. Parallel branch (I).
2. Parallel branch (II).
3. Parallel branch (III).

MODULE 8. BIM. ADVANCED RAILWAY LINE DESIGN. SOLID GENERATION. COSTS WITH QUANTITY TAKEOFF. IFC GENERATION

1. DIDACTIC UNIT 1. PRELIMINARY PROJECT AND LAYOUT IN PLANT AND ELEVATION.

1. Preliminary project.
2. Configuration and surfaces.
3. Axis in plan and elevation.
4. Track devices.
5. Camber.

2. DIDACTIC UNIT 2. TYPE SECTIONS AND LINEAR WORKS.

1. Type sections.
2. Linear works.
3. Intersections.
4. Cross profiles.

5. Codes.

3. DIDACTIC UNIT 3. DRAINAGE, MEASUREMENTS AND PLANS

1. Drainage
2. Pipe networks
3. Measurements
4. Shortcuts
5. Plans

4. DIDACTIC UNIT 4. EXPORT, IFC AND RENDERING.

1. Dynamo and Project Explorer.
2. Property sets.
3. Export to Navisworks.
4. Export to IFC.
5. Presentation and rendering.

MODULE 9. BIM. PLANNING AND COSTS OF A RAILWAY LINE WITH NAVISWORKS

1. DIDACTIC UNIT 1. PLANNING.

1. Introduction.
2. Task table.
3. Link to external project files.
4. Aspects of tasks and simulations.
5. Simulation configuration and export.

2. DIDACTIC UNIT 2. COSTS AND MEASUREMENTS.

1. Introduction of reMODULES costs.
2. Quantification.
3. Model measurements and virtual measurements.
4. 2D measurements.
5. Administration and updating of data.

MODULE 10. BIM. BIM FOR CONSTRUCTION PLANNING

1. DIDACTIC UNIT 1. 4D PLANNING.

1. The Work Breakdown Structure (WBS).
2. Activity codes, reMODULES 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 11. BIM. BUDGETS AND CERTIFICATIONS (I)

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

MODULE 12. BIM. BUDGETS AND CERTIFICATIONS (II)

1. DIDACTIC UNIT 1. PRESTO. BUDGETS

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

2. DIDACTIC UNIT 2. PLANNING AND WORK

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

MODULE 13. BIM. INTEROPERABILITY FROM PIM TO AIM. INFORMATION MANAGEMENT IN BIM MODELS WITH DYNAMO. LINEAR WORKS

1. DIDACTIC UNIT 1. DYNAMO GEOMETRY

1. Dynamo C3D
2. Geometry Bookstore
3. Manage lists
4. Dynamo Interactivity - Civil
5. Creating elements with Dynamo

2. DIDACTIC UNIT 2. DYNAMO - CIVIL GEOMETRY

1. Creation of a planimetric axis
2. Profile creation
3. Corridor Creation
4. Data management
5. Create 3D elements

MODULE 14. TFM. ADVANCED BIM MASTER IN DESIGN AND EXECUTION OF LINEAR WORKS

Qualification

University Degree in Master of Lifelong Training in Advanced BIM in Design and Execution of Linear Works issued by the Antonio de Nebrija University with 60 ECTS University Credits. Teachings not leading to obtaining an official qualification

Objectives

- • You will integrate the information modeling methodology (BIM) into the complete life cycle of linear infrastructure projects. • You will master the use of advanced software, such as Civil3D, for modeling and simulation of complex infrastructures. • You will establish BIM•GIS interoperability workflows in collaborative environments, ensuring efficient information management. • You will apply the international ISO 19650 standard for standardization and quality in project data management. • You will design Digital Construction (VDC) implementation strategies to optimize the design and execution of transportation, hydraulic and port infrastructure. • You will evaluate the impact of BIM and VDC solutions on the efficiency, sustainability and profitability of linear work projects. • You will lead the digital transformation in civil engineering projects, directing teams and implementation processes of advanced solutions.

What does it prepare you for?

This program prepares you to lead the digital transformation in the infrastructure sector, providing you with the necessary skills to optimize the design and execution of linear works. You will specialize in the practical application of information modeling (BIM) methodology, integrating virtual modeling into all phases of the life cycle of a civil infrastructure project, from conception to delivery. You will establish interoperability workflows in collaborative environments, ensuring coherence and efficiency in information management. You will apply the international ISO 19650 standard, guaranteeing quality and standardization in your projects. You will learn advanced software such as Civil3D, which will allow you to make strategic decisions based on precise data and complex models. You will solve real practical cases, developing a global vision that will allow you to direct transport, hydraulic and port infrastructure projects with an innovative and advanced perspective.

Who is it addressed to?

This master's degree is aimed at civil engineering professionals, including road, canal and port engineers, civil and industrial engineers, as well as infrastructure specialists seeking advanced specialization. If you work in the field of transportation, hydraulic or port infrastructure, and your objective is to update your knowledge in digital construction methodologies and virtual modeling, this program offers you a strategic answer. If you recognize that technological evolution, with Digital Construction (VDC) and project information management, requires constant updating to optimize the design and execution of linear works, and you want to lead this transformation in your projects, this program will provide you with the tools to do so.

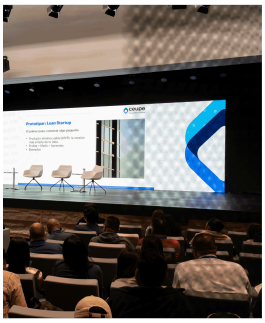
Official Character

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 BIM methodology for linear works positions you strategically in the civil infrastructure sector. You will assume roles of high responsibility, consolidating your professional career. You will be able to work as a BIM Manager, leading the implementation and comprehensive management of this methodology in complex transportation, hydraulic or port infrastructure projects. It will also allow you to assume the role of Digital Construction Coordinator, ensuring interoperability and compliance with ISO 19650 regulations in collaborative environments. In addition, you will be able to orient your profile towards consulting specialized in Digital Construction (VDC) and virtual modeling, advising on tenders and the definition of execution plans for large projects. Your advanced knowledge in software such as Civil3D and data management in a Common Data Environment (CDE) will open doors to technical and strategic leadership positions in construction, engineering and public administrations.







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.

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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, 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

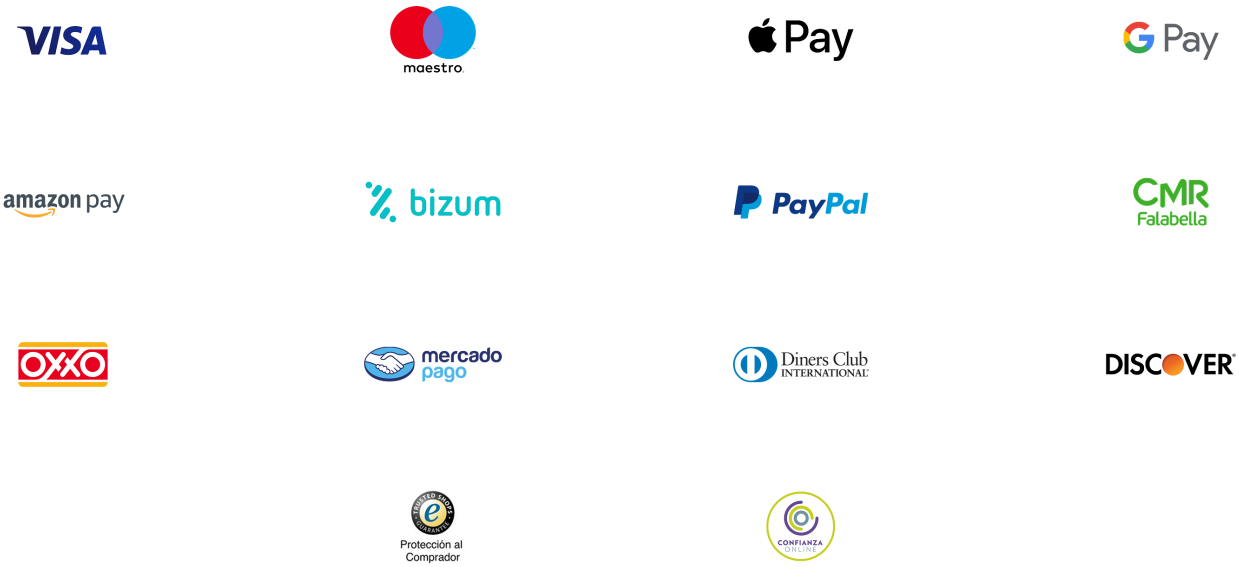
EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development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

20%
Large Family Scholarship