Structuralia
Engineering eLearning

UNIVERSIDAD
NEBRIJA

Master´s Degree in Railway Infrastructure Design, Construction and Maintenance. Specialty in Underground Urban Transport Infrastructure + 60 ECTS Credits





Choose to learn at school
leader in online training

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ABOUT STRUCTURALIA

Structuralia is an online educational institution offering highly specialized postgraduate programs in engineering, infrastructure, construction, energy, building, digital transformation, and new technologies. Since our founding in 2001, we have been committed to providing quality training for the professional development of **engineers, architects, and STEM professionals.**

We provide a platform where you can acquire new skills and enhance your knowledge without being limited by time or location. Our methodology ensures an engaging, interactive, and **supportive educational experience,** equipping our students to meet future challenges in their respective fields of work.

More than **20** years of experience

Over **200k** student have learnt with us

More than **90** nationalities among our students



Specialize to
advance your career

STRUCTURALIA ALLIANCE AND NEBRIJA UNIVERSITY

Structuralia and the University of Nebrija successfully consolidate a strategic partnership. Thus, the collaboration between Structuralia and the University of Nebrija promotes a collaborative, innovative and accessible approach towards learning that is adapted to the individual needs of students.

The two institutions prioritize practical and flexible learning, adapted to the demands of today's working world, and which promotes the personal and professional development of each student. The purpose is to acquire new knowledge in a dynamic and didactic way, which facilitates its retention and contributes to developing the necessary skills to be ready to take part in a society in constant and rapid transformation.

Structuralia and the University of Nebrija have set as their main objective the democratization of education to bring it to even the most remote areas and taking advantage of the latest technological innovations. In addition, they have a team of highly specialized teachers and learning platforms that incorporate cutting-edge educational technology to provide academic support throughout the entire educational process.



STRUCTURALIA RANKINGS

Structuralia has achieved the recognition of different national and international rankings, thanks to its commitment to **democratize education** and bet on educational innovation to **achieve excellence.**

For the elaboration of these rankings, **indicators** such as online and offline reputation, the quality of the institution, social responsibility, educational innovation or the profile of professionals are used.















QS, seal of academic excellence

Structuralia: 5 stars in online education

BY EDUCA EDTECH

Structuralia is a brand endorsed by **EDUCA EDTECH Group,** which is composed of a group of experienced and recognized **educational institutions of online training.** All the entities that make it up share the mission of **democratizing access to education** and are committed to knowledge transfer, technological development and research.

EDUCA EDTECH Group

ONLINE EDUCATION

EUROINNOVA INTERNATIONAL ONLINE EDUCATION

inesem business school

INEAF BUSINESS SCHOOL

red educa.net

inesalud

EDU SPORT

EDUCA business school

ESIBE ESCUELA IBEROAMERICANA DE POSTGRADO

Educa.Pro

ceupe European Business School

UDAVINCI

CAPMAN testing solutions

Structuralia Engineering eLearning

UNIMIAMI International University of Miami

Educa PHAROS

LXP METHODOLOGY

The **EDUCA LXP** methodology enhances the learning experience by incorporating AI into e-learning processes. It utilizes highly customized predictive models based on the analysis of student interactions with their virtual environments.

EDUCA LXP is the outcome of **Research Results Transfer** from multiple interdisciplinary R&D+i projects, involving international universities dedicated to knowledge transfer, technological development and research.



1. Flexibility

100% online and flexible learning, allowing students to study where, when and how they want.



2. Accessibility

We believe in making education accessible to all, working to ensure that everyone has the opportunity to continue their learning journey.



3. Personalization

We offer customized learning paths tailored to each student's unique needs and preferences.



4. Accompaniment / Academic mentoring

Guidance and support. Our team of expert teachers provides academic guidance, advocating for educational quality and adapting to the needs of the ever-changing labor market.



5. Innovation

We are at the forefront of technological development, constantly evolving with AI-driven Learning Experience Platforms.



6. Educational excellence

Our didactic approach focuses on competence based learning, promoting practical and meaningful learning experiences to ensure professional development.



Programs

Our own university and official programs

WHY CHOOSIG STRUCTURALIA

1. Our Experience

- ✓ More than **20 years of experience**.
- ✓ More than **200.000 students** have already learnt in our virtual classrooms.
- ✓ More than **90 nationalities** among our student body.

2. Our Team

Currently, Structuralia has a team of **more than 550 professionals working in the STEM (Science, Technology, Engineering and Mathematics)**. Our staff is solidly framed in a structure that facilitates the highest quality in the attention to students.

3. Our Methodology



100% ONLINE

Study at your convenience, wherever you are. Access our virtual campus from any device.



LEARNING

We strive for a deep integration of new knowledge into your cognitive framework.



TEAM TEACHERS

Structuralia has a team of professionals to elevate your study experience with topquality education.



NOT BE ALONE

Receive continuous guidance from our tutoring team throughout your student journey.

4. AENOR Quality

- ✓ We are Collaboration Agency Nº99000000169 authorized by the Ministry of Employment and Social Security.
- ✓ Annual external audits are carried out to ensure the highest quality by AENOR.
- ✓ Our teaching processes are certified by AENOR under ISO 9001.

Master´s Degree in Railway Infrastructure Design, Construction and Maintenance. Specialty in Underground Urban Transport Infrastructure + 60 ECTS Credits



LENGHT
1500 horas



MODE
ONLINE



ASSISTANCE
PERSONALIZED



CREDIT
60 ECTS

Certificacion

Master´s Degree in Railway Infrastructure Design, Construction and Maintenance. Specialty in Underground Urban Transport Infrastructure with 60 ECTS Credits awarded by the Antonio de Nebrija University. Teaching not leading to an officially accredited qualification



Description

This program is a compendium of the railway system as a whole. As a matter of fact, it provides knowledge about the entire life cycle of the railway system, from its initial project phases, through its construction process to its subsequent maintenance. It also clearly reflects the technological evolution in the railway field, the existing regulations, and the modern means of railway maintenance. Due to its comprehensive nature, this program goes into the different railway subsystems such as infrastructure, superstructure, power, signalling and telecommunications from both construction and maintenance perspectives, where each technique has its own material resources, construction procedures and specific maintenance. Furthermore, the master's degree offers the opportunity to focus and specialize in two particularly attractive fields with a high degree of growth, such as high-speed and urban railway systems.

Goals

The general objective of this program is to build the student's capacities in different technical and management-related disciplines that are necessary for the design, construction and maintenance of railway systems and structures. The specific targets associated with this program are: - Learn the aspects related to the management of railway line construction, as well as those related to the modernization of existing lines in terms of legal constraints, financing of infrastructures, environmental management, supplier relationship, etc. - Learn the main specific parameters necessary to design and draft railway infrastructure projects, whether for conventional, high-speed, metro or tram lines. - Address technical aspects related to civil works involved in the construction of railway infrastructures such as viaducts, tunnels, earthworks, leveling, etc. - Learn the current specifications necessary for the design and construction of railway systems in relation to track superstructures, electrification, substations, signalling, communications, etc. - Have extensive knowledge of

crosscutting aspects of railway maintenance management, such as quality, environment, safety, railway maintenance models developed by different European countries. - Study the different infrastructure and superstructure track maintenance techniques, weld inspection and maintenance, expansion device regulations, etc. - Learn maintenance techniques applied to electrification installations such as the catenary, substations, grounding installations, etc. - Analyze and apply knowledge of railway signalling system maintenance: CTCs, interlocks, blockades, automated level crossings, etc. - Learn maintenance techniques applied to railway network telecommunications and information systems. - In relation to each of the specialties (High-Speed or Urban Railways), their objectives is for the student to learn the specific particularities in the Design, Construction and Maintenance of railway infrastructures in these two fields."

What does it prepare you for?

This program is intended for technicians from different specialties who are interested in building their capacities in the design, construction, and maintenance of railway lines, civil engineers (Roads, canals and ports), civil work technical engineers, industrial engineers, technical industrial engineers, telecommunications engineers, etc. More specifically, this program is intended for: - Professionals with current or past experience in any of the different areas within the railway sector, who wish to acquire base knowledge and skills in order to join railway companies and related professional activities. - Professionals with current or past experience in any of the different areas within the railway sector, who wish to acquire multi-disciplinary knowledge and skills above their current level or specialty.

Who is the target audience?

This program is aligned with the current trends in the railway sector, thus providing a 360º view of the sector and the complete life cycle of each railway subsystem. From the initial tasks to the techniques and means available to tackle railway construction projects, and the most innovative maintenance methodologies, this program intends to lead the student to a global and continuous understanding of the railway sector as a whole from different perspectives related to structural subsystems: infrastructure, superstructure, power, telecommunications and signalling.

Job opportunities

Once the student completes this master’s degree, he/she will be able to apply for different positions within the railway field. There is a wide variety of professional opportunities related to railway design and construction, and infrastructure maintenance. In addition, other opportunities include project designer/author, railway specialist, railway technician, production manager, construction manager, technical assistance manager or construction manager, track technologist, railway consultant, maintenance base technician, maintenance manager, railway system auditor, etc. Bear in mind that these opportunities will also be based on previous qualifications and years of experience in the sector which, along with the different skills and knowledge of railway infrastructure, superstructure, power,

telecommunications and signalling design, construction and maintenance acquired throughout this program, will be multiplied.

List of subjects

MODULE 1. DESIGN AND CONSTRUCTION OF INFRASTRUCTURE SUBSYSTEMS

UNIT 1. RAILWAY PROJECTS AND INTEGRAL MANAGEMENT. INTERMODALITY

UNIT 2. PLATFORM AND EARTHWORKS

UNIT 3. TUNNELS

UNIT 4. BRIDGES AND VIADUCTS

MODULE 2. DESIGN AND CONSTRUCTION OF SUPERSTRUCTURE SUBSYSTEMS

UNIT 1. GROUND LAYOUT AND TRACK ELEVATION

UNIT 2. TRACK MATERIALS

UNIT 3. TRACK ASSEMBLY

UNIT 4. RAILWAY OPERATION FACILITIES. TERMINALS

MODULE 3. DESIGN AND CONSTRUCTION OF POWER SUBSYSTEMS COURSE

UNIT 1. RAILWAY ELECTRIC TRACTION

UNIT 2. OVERHEAD CONTACT LINE

UNIT 3. SUBSTATIONS

UNIT 4. ENERGY SUBSYSTEM IN HIGH-SPEED, METRO AND TRAM

MODULE 4. COURSE IN DESIGN AND CONSTRUCTION OF SIGNALLING AND TELECOMMUNICATIONS SUBSYSTEMS

UNIT 1. SIGNALING SYSTEMS AND COMPONENTS

UNIT 2. MAIN ATP SYSTEMS

UNIT 3. TELECOMMUNICATIONS SUBSYSTEM. TRANSMISSION MEDIA AND TELECOMMUNICATION NETWORKS

UNIT 4. TELECOMMUNICATIONS SUBSYSTEM. NETWORK MANAGEMENT AND SUPERVISION SYSTEMS, TELECOMMUNICATIONS SERVICES AND TECHNICAL ROOMS

MODULE 5. COURSE IN RAILWAY INFRASTRUCTURE MAINTENANCE

UNIT 1. MAINTENANCE MODELS AND PLANS, OPERATION AND EXPLOITATION

UNIT 2. MAINTENANCE OF EARTHWORKS

UNIT 3. TUNNELS

UNIT 4. BRIDGES AND VIADUCTS

MODULE 6. MAINTENANCE OF RAILWAY SUPERSTRUCTURE

UNIT 1. MAINTENANCE MODELS AND PLANS OPERATION AND EXPLOITATION

UNIT 2. TRACK COMPONENTS

UNIT 3. WELDING CONTROL AND SUPERVISION

UNIT 4. TRACK QUALITY EVALUATION

MODULE 7. ELECTRIFICATION MAINTENANCE OF RAILWAY

UNIT 1. MAINTENANCE OF THE OVERHEAD CONTACT LINE

UNIT 2. CONTROL OF OVERHEAD CONTACT LINE SUPPORT ELEMENTS

UNIT 3. TRACTION SUBSTATION MAINTENANCE

UNIT 4. TROUBLESHOOTING

MODULE 8. MAINTENANCE OF RAILWAY SIGNALLING AND TELECOMMUNICATIONS SYSTEMS

UNIT 1. MAINTENANCE OF INTERLOCKINGS, BLOCKS AND CTCS

UNIT 2. MAINTENANCE OF TRACK CIRCUITS AND LEVEL CROSSINGS

UNIT 3. MAINTENANCE OF SYSTEMS (ATP - ERTMS)

UNIT 4. MAINTENANCE OF COMMUNICATIONS SYSTEMS

MODULE 9. URBAN RAILWAYS

UNIT 1. KEY ASPECTS IN THE DESIGN OF A METROPOLITAN RAILWAY

UNIT 2. PROJECT AND CONSTRUCTION OF TRACK SUPERSTRUCTURE AND FIXED INSTALLATIONS

UNIT 3. KEY ASPECTS IN THE MAINTENANCE OF A METROPOLITAN RAILWAY

UNIT 4. MAINTENANCE OF THE TRACK SUPERSTRUCTURE AND FIXED INSTALLATIONS

MODULE 10. MFP. MASTER'S DEGREE IN RAILWAY INFRASTRUCTURE DESIGN, CONSTRUCTION AND MAINTENANCE. SPECIALTY IN UNDERGROUND URBAN TRANSPORT INFRASTRUCTURES

Did you find this information interesting?

If you still have questions, our academic advising team will be happy to answer them.

Ask us about our training method, our teachers, scholarships or even just get to know us.

Request information without commitment.

Find us here!

info@structuralia.com

www.structuralia.com

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