

Internship Program

Railway Systems





Internship Program
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01

Introduction to the Program

Railway Systems are a strategic pillar for the efficient transportation of goods and passengers, contributing to the economic development and sustainability of cities and regions. In this context, more than 70% of freight transport in Europe is carried out on modern and optimized railway routes, according to a report from the International Union of Railways, highlighting the global significance of this sector. To meet the demands for technical and operational knowledge, TECH offers a university program, initially focused on practical training within a prestigious entity, applying concepts under the supervision of a specialized tutor, ensuring specific skills in real-world environments.

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This innovative Internship Program will allow you to master the fundamental competencies in Railway Systems, strengthening your professional practice”



Railway transportation has established itself as a strategic element for the mobility of goods and passengers worldwide, due to its efficiency, sustainability, and ability to reduce road congestion.

Moreover, its development directly contributes to economic competitiveness by facilitating the transport of large volumes of freight with lower energy consumption and reduced environmental impact. Today, Railway Systems not only connect cities and regions but also integrate advanced technologies to optimize logistics management, enhance safety, and ensure a constant and reliable flow of goods and people.

In this context, the curriculum at TECH Global University addresses this relevance from multiple perspectives, delving into the knowledge of railways and their engineering in the current context. It also covers the planning and development of railway civil infrastructure, integrating criteria of efficiency, sustainability, and safety. In addition, the program explores the advancements of the new digital revolution applied to railways, such as intelligent signaling systems, process automation, and predictive maintenance. Furthermore, this university program provides professionals with advanced tools and competencies to face the challenges of the railway sector, from project planning to the implementation of technological solutions.

Finally, TECH Global University's methodology is distinguished by its practical nature, allowing knowledge to be applied in real-world scenarios within a prestigious entity. Through the use of advanced technology and under the guidance of a specialized tutor, professionals directly experience railway operation, maintenance, and management processes. Therefore, this practical experience ensures contextualized, solid learning that is directly transferable to the professional field.

02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs, available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it has a huge faculty of more than 6,000 professors of the highest international prestige.

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TECH combines Relearning and the Case Method in all its university programs to guarantee excellent theoretical and practical learning by studying when you want and from wherever you want”

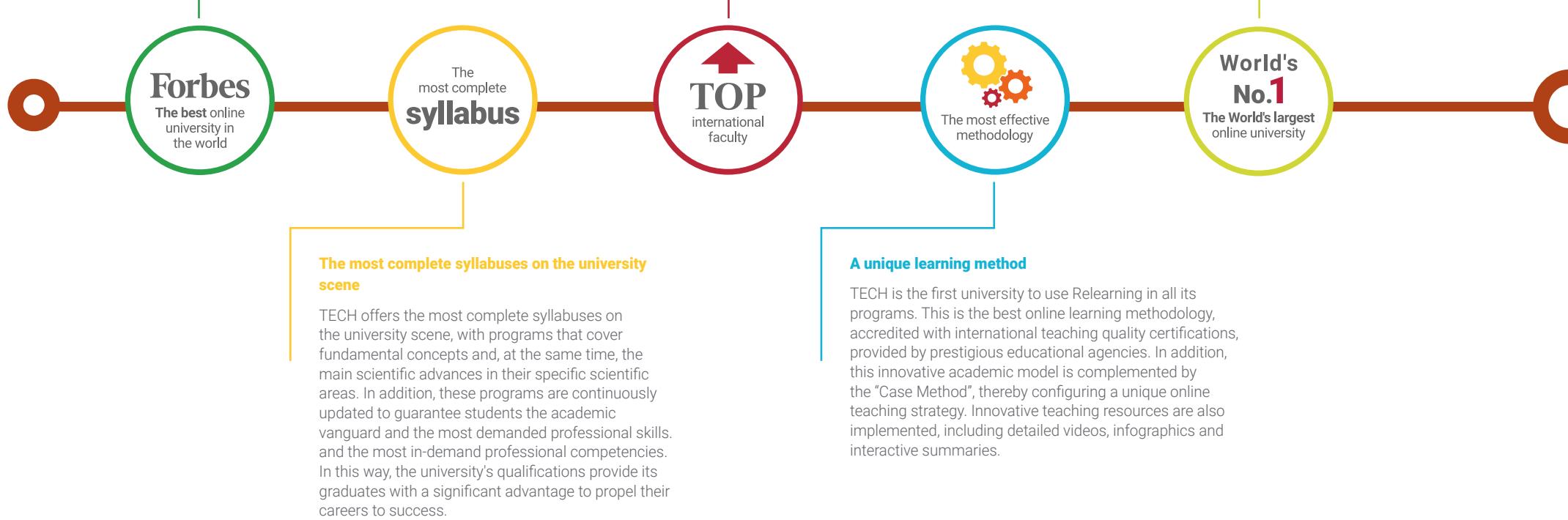


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Study at the largest online university in the world and ensure your professional success. The future begins at TECH”

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world". This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".



The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.



Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.

The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

03

Teaching Objectives

This university program at TECH Global University in Railway Systems will allow students to develop strategic skills for the comprehensive management of railway projects and the optimization of operational processes. It will also facilitate the ability to implement innovative and sustainable solutions that improve the efficiency and safety of railway transportation. Additionally, it will enhance decision-making capabilities, critical analysis of complex systems, and problem-solving in real-world contexts. Furthermore, thanks to the methodology employed, the program promotes the direct application of advanced knowledge while strengthening adaptability and technical leadership within the railway sector.



General Objectives

- Understand the evolution of railways in the current context and its impact on sustainable mobility
- Apply advanced knowledge of electrical traction energy to optimize the operational efficiency of the sector
- Implement innovative solutions in control, command, and signaling, improving safety and accuracy in Railway Systems
- Design strategies for the modernization of railway telecommunications and their integration with digital infrastructure





Specific Objectives

- ◆ Analyze the position of railways in relation to other modes of transportation, identifying their main advantages and areas for improvement
- ◆ Detail the technical characteristics of facilities associated with electrical traction power across different Railway Systems
- ◆ Break down in depth the specific characteristics of the ERTMS and CBTC signaling systems, as the most advanced standardized systems in the current context
- ◆ Identify the main technical aspects of the railway telecommunications in the current moment
- ◆ Deepen the understanding of the interaction between the vehicle and civil infrastructure, analyzing in detail the dynamic phenomena involved
- ◆ Delve into the key technical aspects of railway vehicles
- ◆ Master the regulations governing the application of safety processes across different railway systems and subsystems
- ◆ Establish the main technical aspects of railway operations today
- ◆ Analyze the current situation regarding research, development, and innovation programs, as well as the different policies and strategies for promotion and funding
- ◆ Reflect on the technological evolution of railways, including the current digital revolution

04

Internship

The internship period of this university program in Railway Systems includes an intensive placement at a prestigious entity, always under the supervision of a specialized tutor. This experience will allow professionals to apply their knowledge in a real-world environment, working alongside leading experts in the railway sector. In this way, students will develop and implement innovative solutions for the operation, management, and optimization of Railway Systems.

In this training proposal, each activity is designed to strengthen and refine the key competencies required for specialized practice in this field. In this way, the professional profile will be enhanced, driving a strong, efficient, and highly competitive performance.

In this way, the university program presents a unique opportunity for professionals to work in a technologically advanced environment. Furthermore, they will have the chance to integrate real-world railway sector procedures into professional scenarios equipped with cutting-edge technology, consolidating their skills in a practical and dynamic context.

The practical component will involve the active participation of students, carrying out activities and procedures in each area of competence (learning how to learn and learning by doing), with the support and guidance of professors and fellow trainees who will facilitate teamwork and multidisciplinary integration as transversal skills for engineering practice (learning how to be and learning how to relate).

The procedures described below will be the basis of the practical part of the Internship Program, and its realization will be subject to the center's own availability and workload, being the proposed activities the following:





Module	Practical Activity
Contemporary Approach to Railways and Its Engineering	Analyze the position of railways compared to other modes of transport, considering their competitiveness and current areas for improvement
	Identify the role of regulatory and supervisory bodies, along with the role of the industry and infrastructure managers
	Examine the main trends in the sector, with a particular focus on digitalization and the service model for society
	Describe the fundamental systems of railway infrastructure
Exploration of Electrical Energy Applied to Railway Traction	Analyze electrical energy in railways and the role of power semiconductors
	Relate railway services to the applicable electrification models
	Describe the components of the railway electrical system and the Traction Power System (TPS)
	Compare the characteristics of direct current and single-phase alternating current
Analysis of Telecommunications in Railway Systems	Identify railway telecommunications systems and their classification
	Describe the main transmission media, both fixed and mobile
	Compare the characteristics of GSM-R networks and their evolution towards the FRMCS standard
	Evaluate the operation, supervision, and regulations applicable to railway telecommunications projects
Evaluation of Civil Infrastructure in Railway Systems	Investigate the interaction between the vehicle and civil infrastructure, along with the associated dynamic phenomena
	Specify the technical components that make up the railway infrastructure subsystem
	Examine the particularities of the track and track components as essential elements of the system
	Assess the technical and functional criteria that influence the design and maintenance of civil infrastructure

05 Internship Centers

Below are some of the internship centers selected by TECH for this university program. However, if none of them meet your expectations or needs, TECH is committed to facilitating the formalization of an agreement with an entity that aligns with your preferences, ensuring a fully personalized experience.

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During the intensive internship, you will develop key skills to efficiently and safely manage and optimize Railway Systems”





The student will be able to do this program at the following centers:



Engineering

**Irvia Mantenimiento Ferroviario
(Madrid)**

Country
Spain

City
Madrid

Address: C/ Timoteo Pérez Rubio 4 28053
Madrid

Comprehensive train and railway facility maintenance
services

Related internship programs:

- Mechanical Engineering
- Railway Systems



**Irvia Mantenimiento Ferroviario
(Toledo)**

Country
Spain

City
Toledo

Address: Ctra. Toledo-Aranjuez, Km. 20.
45260 Villaseca de la Sagra (Toledo)

Comprehensive train and railway facility maintenance
services

Related internship programs:

- Mechanical Engineering
- Railway Systems



Actren, Mantenimiento Ferroviario

Country
Spain

City
Madrid

Address: C. de Agustín de Foxá, 27,
1er Piso, Chamartín, 28036 Madrid

Company specializing in comprehensive train maintenance
and auxiliary railway operations

Related internship programs:

- Railway Systems

06

General Conditions

Civil Liability Insurance

The university's main concern is to guarantee the safety of the interns, other collaborating professionals involved in the internship process at the center. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, the university commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the Internship Program period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.



General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

1. TUTOR: During the Internship Program, students will be assigned two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned an academic tutor, whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

2. DURATION: The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

3. ABSENCE: If the student does not show up on the start date of the Internship Program, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

4. CERTIFICATION: Professionals who pass the Internship Program will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: The Internship Program shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION Some centers may require a certificate of prior education for the Internship Program. In these cases, it will be necessary to submit it to the internship department at TECH so that the assignment of the chosen center can be confirmed.

7. 3.- DOES NOT INCLUDE: The Internship Program will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

07 Certificate

This private qualification will allow you to obtain a **Internship Program in Railway Systems** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Internship Program in Railway Systems**

Modality: **Monday to Friday, 8-hour consecutive shifts**

Duration: **3 weeks**

Accreditation: **4 ECTS**



future
confidence people
health information factors
education accreditation **teaching**
guarantee institutions **technology** learning
institutions **technology** learning
community commitment
personalized service **innovation**
knowledge present quality
development **languages**
classroom

tech global
university
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