

# Hybrid Master's Degree

## Road Construction, Maintenance and Operation



## Hybrid Master's Degree Road Construction, Maintenance and Operation

Modality: Hybrid (Online + Internship)

Duration: 12 months

Certificate: TECH Global University

Credits 60 + 4 ECTS

Website: [www.techtitude.com/us/engineering/hybrid-master-degree/hybrid-master-degree-road-construction-maintenance-operation](http://www.techtitude.com/us/engineering/hybrid-master-degree/hybrid-master-degree-road-construction-maintenance-operation)

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# 01

# Introduction

Roads are not only vital arteries for transportation, but also a crucial component for the economic and social development of communities. In this sense, the construction, maintenance and operation of roads play a fundamental role in the connectivity and mobility of people and goods. For this reason, engineering professionals need to incorporate into their practice the most innovative techniques to optimize road infrastructure and thus improve the quality of life of societies. In order to support them in this area, TECH presents a revolutionary university program that will provide experts with the most sophisticated tools to design and build roads. In this way, graduates will be able to work in a booming sector with success.







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*With this Hybrid Master's Degree, you will manage the most efficient methods to optimize both the construction and maintenance of roads”*

The global road network is an essential component of land transportation and international trade. According to World Bank data, more than 80% of the world's goods are transported by road, underscoring the critical importance of roads in the global economy. However, Road Construction, Maintenance and Operation face significant challenges, among which the deterioration of existing infrastructure stands out. In this situation, engineers need to adapt to the changing demands of mobility and sustainability.

In this context, TECH has created a cutting-edge Hybrid Master's Degree in Road Construction, Maintenance and Operation. Designed by experts in this field, the academic itinerary is made up of 10 specialized modules. The didactic materials will delve into the latest innovations in areas such as pavement grading, road pavement works, BIM in roads and administrative file processing. It should be noted that, during the course of the program, graduates will develop advanced skills to handle innovative technologies and efficient methods to improve both the construction and maintenance of road infrastructures.

As for the methodological approach of this university program, it is structured in two distinct phases. The first phase, of a theoretical nature, is taught completely virtually, thus offering a flexible and accessible learning experience. To facilitate this process, TECH has implemented its advanced Relearning system, designed to encourage gradual and fluid learning without relying on conventional memorization methods. The program then integrates a 3-week practical phase in a renowned institution specialized in the field of Road Construction, Maintenance and Operation. This stage will allow graduates to apply their knowledge in a practical environment, working closely with a team of professionals who are experts in the sector.

This **Hybrid Master's Degree in Road Construction, Maintenance and Operation** contains the most complete and up-to-date program on the market.

The most important features include:

- ♦ Development of more than 100 case studies presented by experts in Road Engineering
- ♦ Its graphic, schematic and practical contents provide essential information on those disciplines that are indispensable for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ Furthermore, you will be able to carry out an internship in one of the best companies



*You will have unrestricted access to all the contents of the Virtual Campus and you will be able to download them so consult them whenever and wherever you need them*

“

*You will do a 3-week Internship Program in a prestigious entity, where you will acquire all the knowledge you need to boost your career as an engineer”*

In this Hybrid Master’s Degree proposal, of a professionalizing nature and blended mode, the program is aimed at updating Engineering professionals. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge into practice, and the theoretical-practical elements will facilitate the updating of knowledge.

Thanks to its multimedia content elaborated with the latest educational technology, it will allow the engineering professional a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to train in real situations. This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*A complete and current syllabus configured as a high qualification tool of exceptional quality.*

*Take an intensive 3-week internship at a recognized institution and acquire all the knowledge you need to grow levels, to professionally.*





# 02

## Why Study this Hybrid Master's Degree?

The demand for professionals in Road Construction, Maintenance and Operation has increased significantly due to the crucial role that these infrastructures play in land transportation, facilitating the efficient movement of people and goods. In this sense, it is essential for engineers to keep up to date with the latest advances in this field in order to offer high quality services that contribute to the well-being of communities. In view of this, TECH has created this pioneering degree, where the most recent update in areas such as structural maintenance, BIM in roads or traffic facilities is combined with a practical stay in a recognized institution specialized in this field.







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*You will learn valuable lessons through real cases in simulated learning environments”*

### **1. Updating from the latest technology available**

Technological innovations are revolutionizing road construction, maintenance and management, improving the efficiency, safety and sustainability of road projects. In response to this evolution, TECH has designed a university degree for graduates to master the most advanced technological tools in their professional field.

### **2. Gaining in-depth knowledge from the experience of top specialists**

This university degree has been developed by leading professionals in the field of Road Construction, Maintenance and Operation. During the initial phase of the program, teachers will offer personalized guidance to students. Moreover, throughout the practical stay, engineers will be supported by experienced professionals from the institution where they will carry out their training.

### **3. Entering first-class professional environments**

In line with its commitment to academic excellence, TECH carefully chooses the institutions where students will carry out their 3-week Internship Program, an integral part of this program. These entities are recognized for their prestige and have specialized experts in the field of road construction, maintenance and operation.







#### **4. Combining the best theory with state-of-the-art practice**

This Hybrid Master's Degree represents a significant break with conventional educational approaches, which sometimes neglect practice in their university programs. Instead, TECH has created an innovative educational model that integrates theory and practice. This approach facilitates engineers' access to leading institutions in the field, thus strengthening their professional education with high-level practical experiences.

#### **5. Expanding the boundaries of knowledge**

This university TECH program opens up global opportunities for engineers, allowing them to broaden their professional perspectives on an international scale. This is facilitated through the extensive network of contacts and collaborators that characterizes TECH, recognized as the largest digital university in the world.

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*You will have full practical immersion  
at the center of your choice”*



# 03

# Objectives

Through this university degree, professionals will stand out for their high level of knowledge on the techniques of Construction, Maintenance and Operation of Roads. Along the same lines, graduates will acquire advanced skills to use the most innovative technologies to improve the construction of road infrastructures. Likewise, students will promote maintenance practices that are environmentally and economically sustainable.







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*You will master the most sophisticated technologies to optimize the maintenance of road infrastructures”*





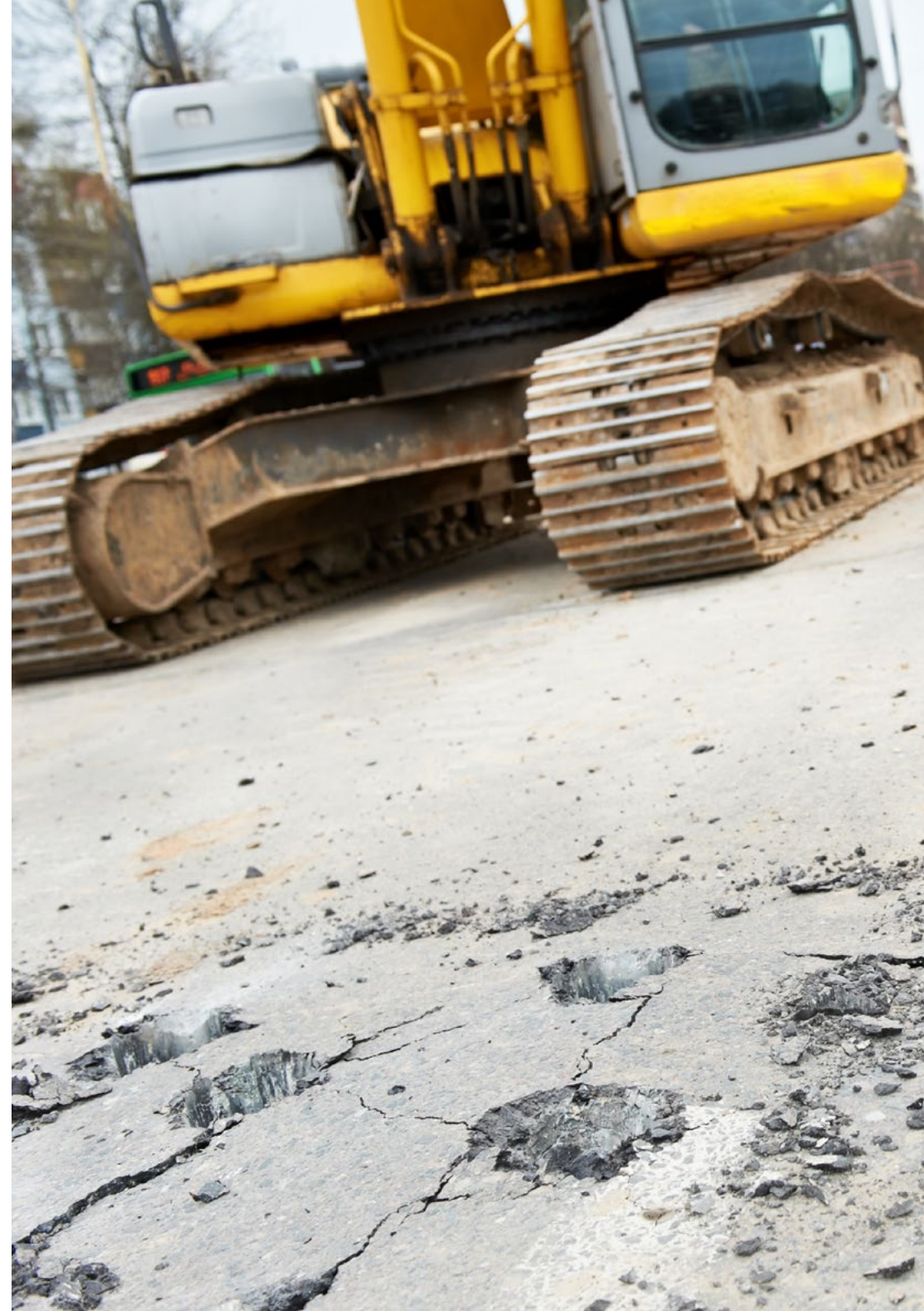
### General Objective

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- ◆ This Hybrid Master's Degree in Road Construction, Maintenance and Operation will provide engineers with the skills to effectively manage road infrastructure construction processes, from planning to execution and handover. Professionals will also incorporate into their practice the most innovative preventive maintenance techniques to prolong the useful life of roads, as well as to significantly minimize negative impacts



*Your career goals will be closer when you complete this refresher program"*







## Specific Objectives

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### Module 1 Contracting and Business Management

- ♦ Analyze the different management systems used for the management of the different assets: pavements, structures, electrical and traffic installations and other elements of the road and the most relevant indicators
- ♦ Develop a deeper understanding of the contractual structure related to roads
- ♦ Develop business management concepts
- ♦ Establish how to achieve more sustainable policies by minimizing the resources used and taking advantage of new technologies

### Module 2 Layout, Grading and Execution of Pavements

- ♦ Acquire in-depth knowledge in the design and layout of roads, understanding the importance of the different phases and stages for the realization of the same
- ♦ Acquire the necessary knowledge regarding the different operations related to earth moving Developing the different existing types, with a practical approach, which allows to know their costs, performance, etc depending on the different terrains and typology of the works to be executed
- ♦ Know, in detail, from a current and practical point of view, the constituent elements of bituminous pavements
- ♦ Develop, in a comprehensive manner, the different types of existing pavements, with special emphasis on which situations to use each one of them All this from an objective point of view based on experience, without forgetting to strengthen the knowledge from the point of view of the design of each of the different types of pavement



- ♦ Able to accurately understand the day-to-day operation of a bituminous mix manufacturing facility Going through the dosing and quality marking of the different mixes, the study of manufacturing costs and their maintenance
- ♦ Delve into the day-to-day work of laying bituminous mixes, identifying the essential aspects and the most common difficulties in transport, paving and compacting operations

### **Module 3 Tunnels and road works**

- ♦ Analyze the different tunnel construction systems and identify the most common pathologies depending on the construction system used
- ♦ Master the inspection methods, deepen in data collection through destructive and non-destructive techniques, and know how to perform condition assessment
- ♦ Make a comprehensive analysis of the different types of tunnel structural maintenance: ordinary, extraordinary, renovations, rehabilitations and reinforcements and how each is managed
- ♦ Understand the parameters that accurately measure the safety, comfort, capacity and durability of a pavement
- ♦ In-depth knowledge of pavement monitoring and inspection systems
- ♦ Discuss the actions that can be taken to correct the various parameters of pavements in detail

### **Module 4 Structures and masonry**

- ♦ Analyze how the life cycle of structures is managed through structure management systems
- ♦ Understand, in detail, the different types of structural inspection, which players are involved, what methods are used and how the severity index is assessed
- ♦ Establish the different types of structural maintenance and how they are managed
- ♦ Gain an in-depth understanding of some of the unique maintenance operations

### **Module 5 Electromechanical Installations**

- ♦ In-depth breakdown of the operation and function of the various installations involved in tunnel operation: power supply, ventilation, pumping stations, PCI systems
- ♦ Perform effective maintenance of the facilities based on a combination of corrective and preventive maintenance, with emphasis on predictive maintenance

### **Module 6 Traffic installations**

- ♦ Establish the various systems for detecting incidents in tunnels
- ♦ Know precisely which systems are involved in incident signaling
- ♦ As well as the systems used to communicate with the user in the event of an incident
- ♦ Know in detail how the communication between the Control Center and the field equipment is structured and the elements involved



### Module 7 Other highway elements

- ♦ Gain in-depth knowledge of the existing signaling, beaconing and containment elements on the road, the existing typologies and how their inspection and maintenance is carried out
- ♦ Break down the different enclosure elements and their components, and how they are inspected and maintained
- ♦ Analyze the elements involved in road drainage, and how their inspection and maintenance is carried out
- ♦ Discuss, in detail, the different slope protection systems, and how to check their condition and their maintenance

### Module 8 Operation

- ♦ Establish the regulations applicable to roads and identify the different road protection zones
- ♦ Master traffic restrictions and how to manage special transport or sporting events
- ♦ Cover in detail how the different administrative files are processed
- ♦ Understand precisely how predictive modeling is performed and how traffic data is exploited
- ♦ Understand what factors influence traffic accidents and how road safety audits contribute to maximizing the safety of systems and elements
- ♦ Analyze some of the most relevant ISO management systems in road maintenance

- ♦ Delve into the structure of the winter maintenance plan, the necessary means and the differences between preventive and corrective treatments
- ♦ Analyze how a tunnel control center works, and how traffic and facility management is carried out Understand the importance of action plans
- ♦ Know in detail the basic document in the operation of a tunnel: The Operational Manual; and the actors involved
- ♦ Understand the need to establish the minimum conditions under which an infrastructure can be operated and how to plan actions in a degraded situation

### Module 9 BIM in highways

- ♦ Gain insight into the BIM concept and distinguish it from simply deciding which commercial software to use
- ♦ Delve into the different levels of implementation
- ♦ Be prepared to address BIM implementation in both projects and pre-existing infrastructure
- ♦ Analyze the technologies that complement the BIM philosophy

### Module 10 The Road of the Future

- ♦ Understand precisely how social equity measures enhance competitiveness
- ♦ Prepare for the change in direction that the roadside professional faces in the immediate future
- ♦ Further study of the changes that new technologies will force on the infrastructure or the vehicle
- ♦ Discover how to lead environmentally responsible policies through detailed knowledge of new trends

# 04 Skills

Upon completion of this university degree, engineering professionals will be highly qualified to design viable, efficient and safe projects. Along the same lines, graduates will acquire skills to develop maintenance strategies that extend the useful life of roads and minimize negative impacts. At the same time, professionals will integrate into their practice the most innovative methodologies for road design, construction and management.







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*You will implement effective road safety measures, reducing accidents and improving mobility”*



## General Skills

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- ♦ Master the global environment of highway construction, maintenance and operation, from the international context, markets, to project development, operation and maintenance plans and sectors such as insurance and asset management
- ♦ Apply acquired knowledge and problem-solving skills in current or unfamiliar environments within broader contexts related to road construction
- ♦ Be able to integrate knowledge and get a deep insight into the different procedures used in road construction
- ♦ Know how to communicate design, development and management concepts of the different systems of engineering
- ♦ Understand and internalize the scope of digital and industrial transformation applied to road construction systems for efficiency and competitiveness in today's market
- ♦ Be able to perform critical analysis, evaluation and synthesis of new and complex ideas related to the field of engineering







## Specific Skills

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- ◆ Know the different management systems used for the management of the different elements of the assets: pavements, structures, electrical and traffic installations and other elements of the road and relevant indicators
- ◆ Manage the contractual structure related to roads
- ◆ Master the design and layout of roads, understanding the importance of the different phases and stages for their realization
- ◆ Have the necessary knowledge of the different operations related to earthmoving  
Developing the different existing types, with a practical approach, which allows to know their costs, performance, etc depending on the different terrains and typology of the works to be executed
- ◆ Handle, from a current and practical point of view, the constituent elements of bituminous pavements
- ◆ Analyze the different tunnel construction systems and identify the most common pathologies depending on the construction system used
- ◆ Master the inspection methods, deepen in data collection through destructive and non-destructive techniques, and know how to perform condition assessment
- ◆ Understand how the life cycle of structures is managed through structure management systems
- ◆ Understand, in detail, the different types of structural inspection, which players are involved, what methods are used and how the severity index is assessed
- ◆ Understand the differences between opencast and tunnel lighting systems
- ◆ Know how to set up the various systems for detecting incidents in tunnels
- ◆ Know precisely which systems are involved in incident signaling
- ◆ Know the existing signaling, beaconing and containment elements on the road, the existing typologies and how their inspection and maintenance is carried out
- ◆ Know how to work with the different enclosure elements and their components, and how their inspection and maintenance is carried out
- ◆ Know the regulations applicable to roads and identify the different road protection zones
- ◆ Know how to work with traffic restrictions and how to manage special transport or sporting events
- ◆ Master the BIM concept and distinguish it from the mere decision of which commercial software to use
- ◆ Understand precisely how social equity measures enhance competitiveness



*You will expand your knowledge through multimedia resources such as interactive summaries or explanatory videos, guaranteeing you an enjoyable learning experience”*

# 05

# Course Management

TECH is committed to offering the highest quality and up-to-date university programs. To achieve this, it carries out a rigorous selection process of its teaching staff. This Hybrid Master's Degree in Road Construction, Maintenance and Operation has the participation of recognized experts in the field, who have extensive work experience in renowned institutions worldwide. Their experience has allowed them to develop high quality didactic materials, designed to significantly enrich the professional perspectives of the graduates.





“

*You will have the support of a teaching team made up of renowned specialists in Road Construction, Maintenance and Operation”*



## Management



### Mr. Barbero Miguel, Héctor

- ♦ Civil Engineer
- ♦ Head of the Safety, Operation and Maintenance Area at Emesa M30
- ♦ Head of COEX in one of the areas of the Provincial Council of Bizkaia
- ♦ COEX technician in Salamanca for the maintenance of the roads of the Junta de Castilla y León.
- ♦ Civil Engineer, Alfonso X el Sabio University.
- ♦ Technical Engineer in Public Works from the University of Salamanca.
- ♦ Certificate in Digital Transformation from MIT

## Professors

### Mr. Fernández Díaz, Álvaro

- ♦ Area delegate at Trabajos Bituminosos SLU
- ♦ Civil Engineer from the ETSI Civil Engineering School of the Polytechnic University of Madrid
- ♦ Course on Occupational Risk Prevention for Construction Company Managers given by the Construction Labor Foundation
- ♦ Course on Motivation, Teamwork and Leadership given by Fluxa Formation

### Mr. García García, Antonio

- ♦ Network Automation Engineer
- ♦ Staff Engineer Network Intelligence & Automation at CommScope and ARRIS
- ♦ Member of: EMEA Network Intelligence & Automation Solution Group within the Professional Services Business Unit
- ♦ Technical Engineer in Computer Systems from the Universidad Pontificia de Salamanca

**Mr. Ferrán Íñigo, Eduardo**

- ♦ Specialist in Business Administration
- ♦ Opening and management of franchised business centers in Madrid
- ♦ Creation from scratch of a company that installs electric vehicle recharging points
- ♦ Degree in Business Administration from the University of Salamanca
- ♦ Master's Degree in Business Administration from ICADE

**Ms. Suárez Moreno, Sonia**

- ♦ Engineer in Public Works, Roads, Canals and Ports
- ♦ Director of Production at Empresa Mantenimiento y Explotación M30 SA (API Conservación, Dragados-IRIDIUM and Ferrovial Servicios)
- ♦ Member of the Association of Civil Engineers of Madrid
- ♦ Head of COEX M-40 at Grupisa
- ♦ Public Works Engineer, Polytechnic University of Madrid
- ♦ Civil Engineer from the European University of Madrid
- ♦ Executive Program for Women in Senior Management in the Woman Leadership & Management Program at Esade
- ♦ Senior Technician in Occupational Risk Prevention, Occupational Safety and Ergonomics and Applied Psychosociology
- ♦ EJE&CON's *Talent without Gender* Award, for the Talent Development and Communication policies implemented by the company
- ♦ Member of: Conservation Committee of the Technical Association of Roads (ATC) and Spanish Association of Executives and Directors

**Ms. Hernández Rodríguez, Lara**

- ♦ Civil Engineer
- ♦ Production Manager in New Accesses of the South Expansion. Phase 1A. Port of Barcelona
- ♦ Production Manager in the work on the abutments of the Barranco de Pallaresos viaduct on the AVE line. Madrid and French Border
- ♦ Specialist in International Tenders for Railway Works in the International Contracting Department of OHL Construcción. Barcelona Barcelona
- ♦ Degree in Civil Engineering from the Polytechnic University of Madrid
- ♦ Expert in Port and Coastal Engineering from the University of Las Palmas de Gran Canaria.

**Mr. Navascués Rojo, Maximiliano**

- ♦ Civil Engineer
- ♦ Project Manager at Budget
- ♦ Head of the Works Group at the multinational Dragados
- ♦ Civil Engineer from the Polytechnic of Madrid
- ♦ Master's Degree in Tunnels and Underground Works from the Spanish Association of Tunnels and Underground Works
- ♦ Master's Degree in E-business and E-Commerce from the Comillas Pontificia University (ICAI-ICADE)
- ♦ Executive MBA
- ♦ Certified Project Management Professional (PMP) by the Project Management Institute (PMI)

# 06

# Structure and Content

This program is designed by references in the field of Road Construction, Maintenance and Operation. Thanks to this, students will have access to teaching materials that stand out both for their high quality and for being in line with the requirements of today's labor market. Made up of 10 specialized modules, the curriculum will delve into the most recent innovations in areas such as pavement execution, pavement works and electromechanical installations. In this way, graduates will develop the skills to effectively manage road construction processes, from planning to execution and handover.







“

*They will plan maintenance strategies that prolong the useful life of roads and minimize negative impacts”*

## Module 1. Contracting and Business Management

- 1.1. Phases in the Life of the Road
  - 1.1.1. Planning
  - 1.1.2. Project
  - 1.1.3. Construction
  - 1.1.4. Conservation
  - 1.1.5. Operation
  - 1.1.6. Financing
- 1.2. Types of Contract
  - 1.2.1. Road Works
  - 1.2.2. Services
  - 1.2.3. Grants
- 1.3. The Contract
  - 1.3.1. Bidding
  - 1.3.2. Allocation
  - 1.3.3. Contractual Structure
  - 1.3.4. Completion Deadlines
  - 1.3.5. Changes to the Contract
  - 1.3.6. Social Clauses
  - 1.3.7. Progress Clause
- 1.4. Management Systems
  - 1.4.1. Integrated Management System
  - 1.4.2. Other Systems Regulated in ISO Standards
  - 1.4.3. Bridge Management System
  - 1.4.4. Pavement Management System
  - 1.4.5. CMMS
  - 1.4.6. Management Indicators
- 1.5. Relevant Aspects at the Construction Site
  - 1.5.1. Health and Safety
  - 1.5.2. Outsourcing
  - 1.5.3. Environment
  - 1.5.4. Quality Control
- 1.6. Business and Entrepreneurship
  - 1.6.1. Strategy and Strategic Analysis
  - 1.6.2. Corporate Models
  - 1.6.3. Human Resources
  - 1.6.4. Business Models and Marketing
- 1.7. Business Management
  - 1.7.1. Analysis Tools and Models
  - 1.7.2. Certifications and Compliance
  - 1.7.3. Competitive Advantages
  - 1.7.4. Optimization and Digitization
- 1.8. Financial Management
  - 1.8.1. Risk Analysis
  - 1.8.2. Public Budget
  - 1.8.3. Private Works, Negotiation and Bidding
  - 1.8.4. Cost Analytics
- 1.9. Internationalization of the Sector
  - 1.9.1. Main Markets
  - 1.9.2. Contracting Models
  - 1.9.3. How to Be Competitive Abroad
- 1.10. Technology at the Service of Sustainability
  - 1.10.1. Access to Databases
  - 1.10.2. The Use of Artificial Intelligence Techniques
  - 1.10.3. Drones on the Road



## Module 2. Layout, Grading and Execution of Pavements

- 2.1. Road Planning and Design
  - 2.1.1. Development and Evolution of Materials
  - 2.1.2. Preliminary Study and Preliminary Design
  - 2.1.3. The Project
- 2.2. The Layout
  - 2.2.1. Plan Layout
  - 2.2.2. Elevation Plotting
  - 2.2.3. Cross Section
  - 2.2.4. Drainages
- 2.3. Earth Moving, Excavation and Blasting
  - 2.3.1. Earthwork
  - 2.3.2. Excavations
  - 2.3.3. Ripping and Blasting
  - 2.3.4. Singular Actions
- 2.4. Pavement Sizing
  - 2.4.1. Esplanade
  - 2.4.2. Road Surface Sections
  - 2.4.3. Analytical Calculation
- 2.5. Constituent Elements of Bituminous Pavements
  - 2.5.1. Aggregates
  - 2.5.2. Bitumens and Binders
  - 2.5.3. Filler
  - 2.5.4. Additives
- 2.6. Hot Mix Asphalt
  - 2.6.1. Conventional Bituminous Mixes
  - 2.6.2. Discontinuous Bituminous Mixtures
  - 2.6.3. Bituminous Mixes type SMA
- 2.7. Management of an Asphalt Plant
  - 2.7.1. Plant Organization
  - 2.7.2. Dosing of Mixtures: Working Formulas
  - 2.7.3. Quality Control: CE Marking
  - 2.7.4. Site maintenance

- 2.8. Cold Asphalt Mixtures
  - 2.8.1. Bituminous Slurries
  - 2.8.2. Gravel Irrigation
  - 2.8.3. Cold Agglomerate
  - 2.8.4. Complementary Techniques: Crack Sealing, etc.
- 2.9. Rigid Sidewalks
  - 2.9.1. Design
  - 2.9.2. On-site Installation
  - 2.9.3. Maintenance of Rigid Pavements
- 2.10. On-site Installation
  - 2.10.1. Transportation and Paving
  - 2.10.2. Compaction
  - 2.10.3. Good Practices

## Module 3. Tunnels and Road Works

- 3.1. Recycling and In-Situ Stabilization of Pavements with Cement and/or Lime
  - 3.1.1. Stabilized in Situ with lime
  - 3.1.2. Stabilized in Situ with Cement
  - 3.1.3. In-situ Recycling of Concrete Pavements
- 3.2. Recycling of Bituminous Mixtures
  - 3.2.1. Recycling Machinery
  - 3.2.2. In-situ Cold Recycling with Bituminous Emulsion Coatings
  - 3.2.3. Recycling at Plant (RAP)
- 3.3. Pavement Monitoring
  - 3.3.1. Deterioration Assessment
  - 3.3.2. Surface Regularity
  - 3.3.3. Pavement Adhesion
  - 3.3.4. Deflections
- 3.4. Maintenance Operations on Pavements
  - 3.4.1. Repair of Damage
  - 3.4.2. Surface Rejuvenation and Renewal of the Wearing Course
  - 3.4.3. CRT Correction
  - 3.4.4. IRI Correction
  - 3.4.5. Pavement Rehabilitation

- 3.5. Singular Actions
  - 3.5.1. Asphalt Operation in Urban Areas
  - 3.5.2. Actions on High-Capacity Roads
  - 3.5.3. Use of Geogrids and/or Geocomposites
- 3.6. Tunnels. Regulations BORRAR
  - 3.6.1. Construction
  - 3.6.2. Operation
  - 3.6.3. International
- 3.7. Tunnel Typology
  - 3.7.1. Open Air
  - 3.7.2. In Mine
  - 3.7.3. With Tunnel Boring Machine
- 3.8. General Characteristics of the Tunnel
  - 3.8.1. Excavation and Support
  - 3.8.2. Waterproofing and Coating
  - 3.8.3. Tunnel Drainage
  - 3.8.4. International Singularities
- 3.9. Tunnel Inventory and Inspection
  - 3.9.1. Inventory
  - 3.9.2. Laser Scanners
  - 3.9.3. Thermography
  - 3.9.4. Geo-Radar
  - 3.9.5. Passive Seismic
  - 3.9.6. Refraction Seismic
  - 3.9.7. Pits
  - 3.9.8. Drilling and Coring
  - 3.9.9. Coating Coring
  - 3.9.10. Condition Assessment
- 3.10. Tunnel Maintenance
  - 3.10.1. Ordinary Maintenance
  - 3.10.2. Extraordinary Maintenance
  - 3.10.3. Renovation Operations
  - 3.10.4. Rehabilitation
  - 3.10.5. Reinforcements

## Module 4. Structures and Masonry

- 4.1. Evolution of Structures
  - 4.1.1. Roman Engineering
  - 4.1.2. Evolution of Materials
  - 4.1.3. Evolution of Structural Design
- 4.2. Passage Works
  - 4.2.1. Pontoon
  - 4.2.2. Bridge
  - 4.2.3. Singular Works for the Preservation of Wildlife
- 4.3. Other Structures
  - 4.3.1. Walls and Retaining Elements
  - 4.3.2. Footbridges
  - 4.3.3. Porticos and Banners
- 4.4. Small Masonry and Drainage Works
  - 4.4.1. Spouts
  - 4.4.2. Culverts
  - 4.4.3. Sewers
  - 4.4.4. Drainage Elements in Structures
- 4.5. Bridge Management System
  - 4.5.1. Inventory
  - 4.5.2. Systematization of Structure Management
  - 4.5.3. Severity Rates
  - 4.5.4. Planning of Actions
- 4.6. Inspection of Structures
  - 4.6.1. Routine Inspections
  - 4.6.2. General Major Inspections
  - 4.6.3. Detailed Major Inspections
  - 4.6.4. Special Inspections
- 4.7. Structural Maintenance
  - 4.7.1. Ordinary Maintenance
  - 4.7.2. Renovation Operations
  - 4.7.3. Rehabilitation
  - 4.7.4. Reinforcements





- 4.8. Singular Maintenance Actions
  - 4.8.1. Expansion Joints
  - 4.8.2. Support
  - 4.8.3. Concrete Walls
  - 4.8.4. Adequacy of Containment Systems
- 4.9. Singular Structures
  - 4.9.1. By Design
  - 4.9.2. For its Light
  - 4.9.3. For its Materials
- 4.10. The Value of Structures
  - 4.10.1. Asset Management
  - 4.10.2. Collapse. Unavailability Costs
  - 4.10.3. Equity Value

**Module 5. Electromechanical Installations**

- 5.1. Roadside Facilities
  - 5.1.1. Fundamental Concepts
  - 5.1.2. Open Air
  - 5.1.3. In Tunnel
  - 5.1.4. Predictive Maintenance
- 5.2. Open-air Lighting
  - 5.2.1. Installation
  - 5.2.2. Preventative Maintenance
  - 5.2.3. Corrective Maintenance
- 5.3. Tunnel Lighting
  - 5.3.1. Installation
  - 5.3.2. Preventative Maintenance
  - 5.3.3. Corrective Maintenance

- 5.4. Power Supply
  - 5.4.1. Installation
  - 5.4.2. Preventative Maintenance
  - 5.4.3. Corrective Maintenance
- 5.5. Generator Sets and UPS
  - 5.5.1. Installation
  - 5.5.2. Preventative Maintenance
  - 5.5.3. Corrective Maintenance
- 5.6. Ventilation
  - 5.6.1. Installation
  - 5.6.2. Preventative Maintenance
  - 5.6.3. Corrective Maintenance
- 5.7. Pumping Stations
  - 5.7.1. Installation
  - 5.7.2. Preventative Maintenance
  - 5.7.3. Corrective Maintenance
- 5.8. PCI Systems
  - 5.8.1. Installation
  - 5.8.2. Preventative Maintenance
  - 5.8.3. Corrective Maintenance
- 5.9. Particulate and Gas Filtering Stations
  - 5.9.1. Installation
  - 5.9.2. Preventative Maintenance
  - 5.9.3. Corrective Maintenance
- 5.10. Other Facilities
  - 5.10.1. On the Evacuation Route
  - 5.10.2. Engines
  - 5.10.3. Transformer Station
  - 5.10.4. Corrosion Control

## Module 6. Traffic Installations

- 6.1. The Fourth Technician
  - 6.1.1. Description
  - 6.1.2. Documentation
  - 6.1.3. Maintenance
- 6.2. CCT Equipment
  - 6.2.1. Control Software
  - 6.2.2. Application Integration
  - 6.2.3. Decision Support System
- 6.3. ERU/PLC
  - 6.3.1. Installation
  - 6.3.2. Preventative Maintenance
  - 6.3.3. Corrective Maintenance
- 6.4. CCTV/DAI
  - 6.4.1. Installation
  - 6.4.2. Preventative Maintenance
  - 6.4.3. Corrective Maintenance
- 6.5. SOS and Radio Communication Poles
  - 6.5.1. Installation
  - 6.5.2. Preventative Maintenance
  - 6.5.3. Corrective Maintenance
- 6.6. Variable Signage
  - 6.6.1. Installation
  - 6.6.2. Preventative Maintenance
  - 6.6.3. Corrective Maintenance
- 6.7. Access Equipment
  - 6.7.1. Installation
  - 6.7.2. Preventative Maintenance
  - 6.7.3. Corrective Maintenance
- 6.8. Detection of Atmospheric Conditions
  - 6.8.1. Installation
  - 6.8.2. Preventative Maintenance
  - 6.8.3. Corrective Maintenance



- 6.9. Traffic Stations
  - 6.9.1. Installation
  - 6.9.2. Preventative Maintenance
  - 6.9.3. Corrective Maintenance
- 6.10. Other Facilities
  - 6.10.1. Public Address
  - 6.10.2. Thermal Cameras
  - 6.10.3. Fire Detection

## Module 7. Other Highway Elements

- 7.1. Vertical Signage
  - 7.1.1. Types of Vertical Signage
  - 7.1.2. Inspections
  - 7.1.3. Performance
- 7.2. Horizontal Signage
  - 7.2.1. Types of Road Markings
  - 7.2.2. Auscultation
  - 7.2.3. Performance
- 7.3. Beacons, Traffic Islets and Curbs
  - 7.3.1. Types of Beacons
  - 7.3.2. Inspections
  - 7.3.3. Performance
- 7.4. Containment Systems
  - 7.4.1. Types of Containment Systems
  - 7.4.2. Inspections
  - 7.4.3. Performance
- 7.5. Enclosures
  - 7.5.1. Components
  - 7.5.2. Inventory and Inspection
  - 7.5.3. Maintenance
- 7.6. Drainages
  - 7.6.1. Drainage Elements
  - 7.6.2. Inventory and Inspection
  - 7.6.3. Maintenance

- 7.7. Slopes and Vegetation
  - 7.7.1. Slope Protection Systems
  - 7.7.2. Inventory and Inspection
  - 7.7.3. Maintenance
- 7.8. Level Crossings
  - 7.8.1. Road-FFCC
  - 7.8.2. Road-Airport
  - 7.8.3. Road-Bike Lane
- 7.9. RRLL Prevention
  - 7.9.1. Industry Idiosyncrasy
  - 7.9.2. Good Practices
  - 7.9.3. The Importance of Training
  - 7.9.4. Technology at the Service of Sustainability
- 7.10. The Lifecycle
  - 7.10.1. Construction and Start-Up
  - 7.10.2. Maintenance and Operation
  - 7.10.3. End of Useful Life

## Module 8. Operation

- 8.1. Use and Defense
  - 8.1.1. Applicable Regulations
  - 8.1.2. Road Defence
  - 8.1.3. Road Use
- 8.2. Processing of Administrative Files
  - 8.2.1. Authorizations for Construction Work, Special Transportation or Sports Events
  - 8.2.2. Damage Claim File
  - 8.2.3. Sanctioning File
- 8.3. Traffic Studies
  - 8.3.1. Traffic Forecasts for the Project
  - 8.3.2. The Traffic Model Based on The Information
  - 8.3.3. Exploitation of Traffic Data

- 8.4. Road Safety
  - 8.4.1. Skills
  - 8.4.2. Road Safety Agents
  - 8.4.3. The Importance of Training and Information
  - 8.4.4. Road Safety Audit
  - 8.4.5. International Experiences
- 8.5. International Experiences
  - 8.5.1. Asset Management
  - 8.5.2. Road Safety Management Systems
  - 8.5.3. Energy Efficiency
  - 8.5.4. Other Management Systems
- 8.6. Winter Road Maintenance
  - 8.6.1. Winter Road Plan
  - 8.6.2. Machinery
  - 8.6.3. Fluxes
- 8.7. The Control Center
  - 8.7.1. Traffic Management
  - 8.7.2. Facility Management
  - 8.7.3. Incident Response
- 8.8. The Operating Manual
  - 8.8.1. Operating Actors: Administrative Authority, Tunnel Manager, Safety Manager, Operator
  - 8.8.2. Review and Approval
  - 8.8.3. On the Structure of the Operating Manual
- 8.9. Minimum Operating Conditions
  - 8.9.1. Atmospheric
  - 8.9.2. CCTV
  - 8.9.3. Ventilation
  - 8.9.4. ICP
  - 8.9.5. Lighting
  - 8.9.6. Hydrants
  - 8.9.7. Networks
  - 8.9.8. Other Facilities

- 8.10. The Tunnel Operator
  - 8.10.1. Control Center Operator
  - 8.10.2. Maintenance Operator
  - 8.10.3. Incident Response Operator

## Module 9. BIM in Highways

- 9.1. Origins of Information
  - 9.1.1. Project Documentation
  - 9.1.2. Network Inventory
  - 9.1.3. CMMS
  - 9.1.4. ITS
- 9.2. BIM at the conceptual level
  - 9.2.1. Applicable Regulations
  - 9.2.2. Description of BIM Methodology
  - 9.2.3. BIM Advantages
- 9.3. Implementation of the BIM Methodology in an In-Service Infrastructure.
  - 9.3.1. Coding Assets
  - 9.3.2. Documentation Coding
  - 9.3.3. Attribute Dictionary
  - 9.3.4. IFCs
- 9.4. The BIM Model in Maintenance and Operation
  - 9.4.1. Integration of the Different Platforms
  - 9.4.2. The Importance of Document Management
  - 9.4.3. Knowledge of the State of the Infrastructure
- 9.5. BIM Experiences in other Infrastructures
  - 9.5.1. BIM in Railroads
  - 9.5.2. BIM in Building
  - 9.5.3. BIM in Industry
- 9.6. Software BIM
  - 9.6.1. Planning
  - 9.6.2. Open BIM
  - 9.6.3. Modeling



- 9.7. BIM Management
  - 9.7.1. ISO 19650
  - 9.7.2. BIM manager
  - 9.7.3. The Role of the BIM
- 9.8. Digital Twin
  - 9.8.1. Description
  - 9.8.2. Operation
  - 9.8.3. Advantages
- 9.9. Other Skills to be Developed by the Roadside Professional
  - 9.9.1. Databases
  - 9.9.2. Python Programming
  - 9.9.3. Big Data
- 9.10. New Technologies
  - 9.10.1. 3D Printing
  - 9.10.2. Virtual Reality, Augmented Reality
  - 9.10.3. Point Cloud

## Module 10. The Road of the Future

- 10.1. Social Equity
  - 10.1.1. Equality Policies
  - 10.1.2. Transparency
  - 10.1.3. Remote work Possibilities
- 10.2. Environment
  - 10.2.1. Circular Economy
  - 10.2.2. Energy Autonomy of the Road
  - 10.2.3. Energy Use of the Subsoil
  - 10.2.4. New Projects under Development
- 10.3. Present Continuous
  - 10.3.1. RSC
  - 10.3.2. Administration Liability
  - 10.3.3. The Road in Pandemic

- 10.4. From Passive to Active Information
  - 10.4.1. The Hyperconnected User
  - 10.4.2. Cross Information with Other Modes of Transportation
  - 10.4.3. RRSS
- 10.5. Operation
  - 10.5.1. Variable Speed Management
  - 10.5.2. Pay-Per-Use
  - 10.5.3. Dynamic Electric Recharging
- 10.6. 5G Networks
  - 10.6.1. Network Description
  - 10.6.2. Network Deployment
  - 10.6.3. Utilities
- 10.7. The Connected Vehicle
  - 10.7.1. Road - Vehicle
  - 10.7.2. Vehicle - Road
  - 10.7.3. Vehicle - Vehicle
- 10.8. Autonomous Vehicle
  - 10.8.1. Fundamental Principles
  - 10.8.2. How Does It Affect the Road?
  - 10.8.3. Services Required
- 10.9. *Smart Roads*
  - 10.9.1. Solar Roads
  - 10.9.2. Roads that Decarbonize
  - 10.9.3. Road and Solar Energy
  - 10.9.4. Asphalt of the Future
- 10.10. Applications at your Fingertips
  - 10.10.1. Artificial Intelligence: Image Recognition
  - 10.10.2. Drones on the Road: From Surveillance to Inspection
  - 10.10.3. Robotics in the Service of Occupational Safety

# 07

# Internship

After completing the theoretical part online, this university program includes a period of Internship Program in a leading institution in the field of Road Construction, Maintenance and Operation. During this period, graduates will receive the support of an expert tutor in the field, who will accompany them in all phases of the process, from the preparation to the execution of the internship.







“

*You will carry out your Internship Program in a recognized organization, where you will put into practice your skills in the field of Road Construction, Maintenance and Operation”*

The Internship Program in Road Construction, Maintenance and Operation consists of a practical stay in a distinguished company, lasting 3 weeks, from Monday to Friday, with 8 consecutive hours of practical training with an assistant specialist.

During this intensive practical period, graduates will be guided by an expert in the field, thus ensuring the achievement of the objectives set for this program. Thanks to their in-depth mastery of the subject, students will be able to advance rapidly in their professional careers.

This is an excellent opportunity for engineers to gain experience in a sector that is highly sought after by companies, requiring continuous updates to develop durable, safe and environmentally friendly projects.

Practical teaching will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other training partners that facilitate teamwork and multidisciplinary integration as transversal competencies for the praxis of Construction, Maintenance and Operation of Roads (learning to be and learning to relate).

The procedures described below will be the basis of the practical part of the program, and their implementation will be subject to the center's own availability and workload, the proposed activities being the following:







Module	Practical Activity
Business Management	Draft construction contracts to ensure that all technical, legal and financial specifications are well defined
	Prepare competitive bids and proposals for construction projects, ensuring that they comply with client requirements and current regulations
	Conduct market research to identify new business opportunities and areas for expansion
	Develop and manage project budgets, tracking costs and financial control
Pavement Layout, Grading and Installation Procedures	Conduct detailed topographic surveys to understand terrain characteristics and plan the layout of highways, roads, and other infrastructure
	Evaluate different layout alternatives considering factors such as environmental impact, construction costs, and technical feasibility
	Use specialized software to create plans and models of the proposed layout, facilitating visualization and adjustments as required
	Supervise the marking of the layout on the ground, ensuring that the designed lines and levels are followed
Underground Pipelines	Conduct geotechnical studies to assess soil and rock characteristics, determining stability and conditions for tunnel excavation
	Select the most appropriate excavation methods, such as drilling, blasting and tunnel boring machines
	Monitor and control excavation-induced vibration and settlement to protect nearby structures
	Execute drainage systems to manage water infiltration and maintain tunnel stability
Traffic Infrastructure	Use traffic simulation software to model traffic behavior and plan effective solutions
	Design the placement of traffic signals, road markings, traffic lights and other control signals
	Plan intersections, traffic circles, and crosswalks that improve both traffic flow and safety
	Coordinate the installation of sensors, surveillance cameras, and monitoring systems for intelligent traffic management



## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the students and other collaborating agents involved in the internship process at the company. 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, this entity 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 practical training 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 Hybrid Master's Degree, 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 practical 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 Hybrid Master's Degree, 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 Hybrid Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Master's Degree 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.



# 08

## Where Can I Do the Internship?

True to its commitment to provide the most complete and up-to-date university programs, TECH meticulously chooses the institutions for its Internship Programs. This will allow engineers to carry out their internships in internationally renowned companies, within an environment of excellence. In this way, graduates will have the opportunity to integrate into multidisciplinary teams led by experts in the field of Road Construction, Maintenance and Operation.








“

*You will carry out your practical stay in a recognized entity, where you will have the support of experts with extensive experience in Construction, Maintenance and Operation of Roads”*

## tech 44 | Where Can I Do the Internship?



The student will be able to complete the practical part of this Hybrid Master's Degree at the following centers:



**Engineering**

**Cones**

Country	City
Spain	Madrid

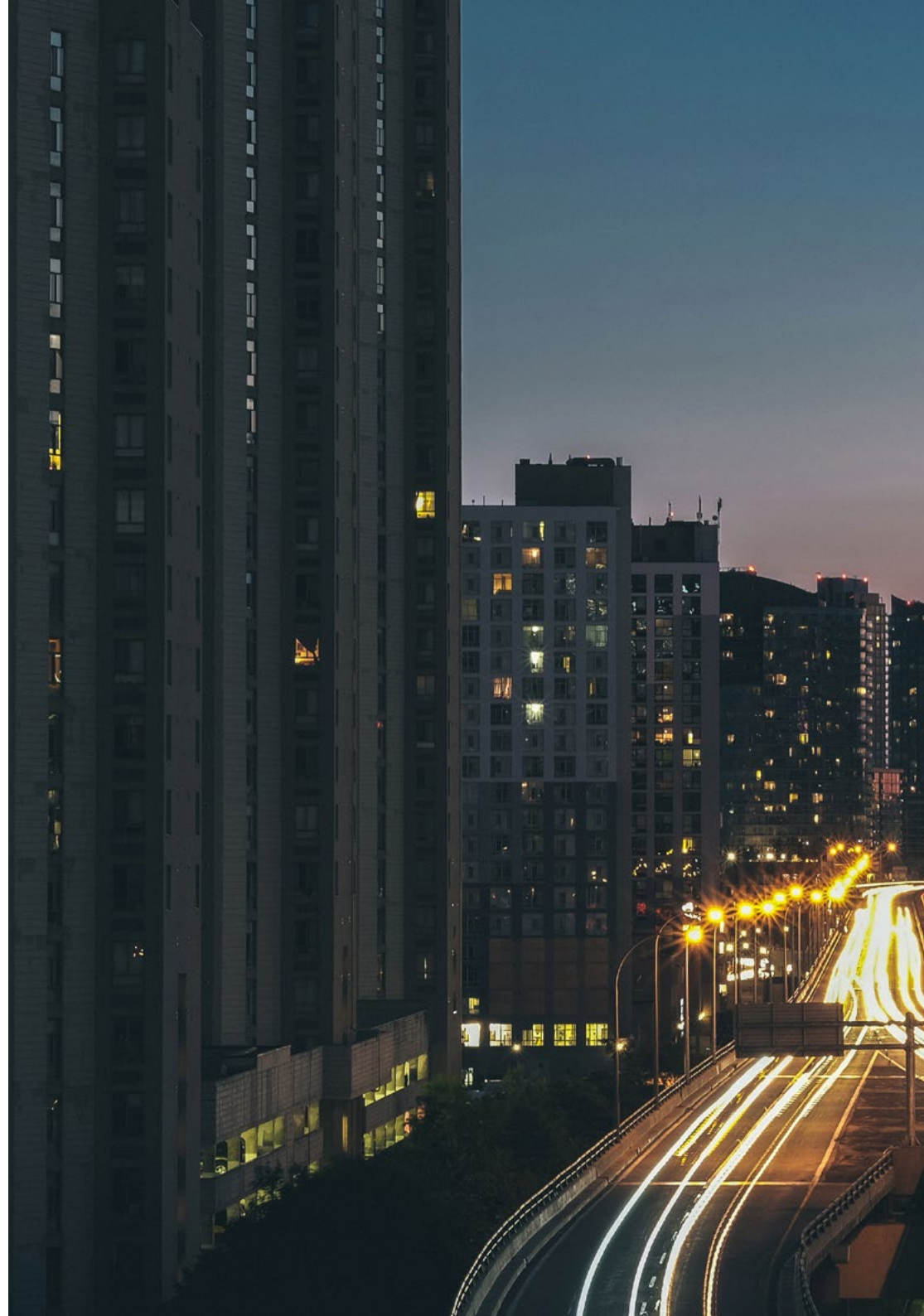
Address: Calle Zinc, 3, Humanes de Madrid,  
28970. Madrid

A prestigious construction company highly specialized in quality control of materials and geotechnical studies.

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**Related internship programs:**

- Geotechnics and Foundations
- Acoustic Engineering







### Lo Bruno Estructuras S.A.

Country                      City  
Argentina                      Santiago del Estero

Address: Fray L. Beltrán y 1º Teniente  
Ardiles. Parque Industrial - La Banda,  
Santiago del Estero

Company specialized in the manufacture of  
construction materials

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**Related internship programs:**

- MBA in Commercial Sales Management
- Infrastructure and Civil Engineering



*You will combine theory and professional practice through a demanding and rewarding educational approach"*



09

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*





*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.





In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



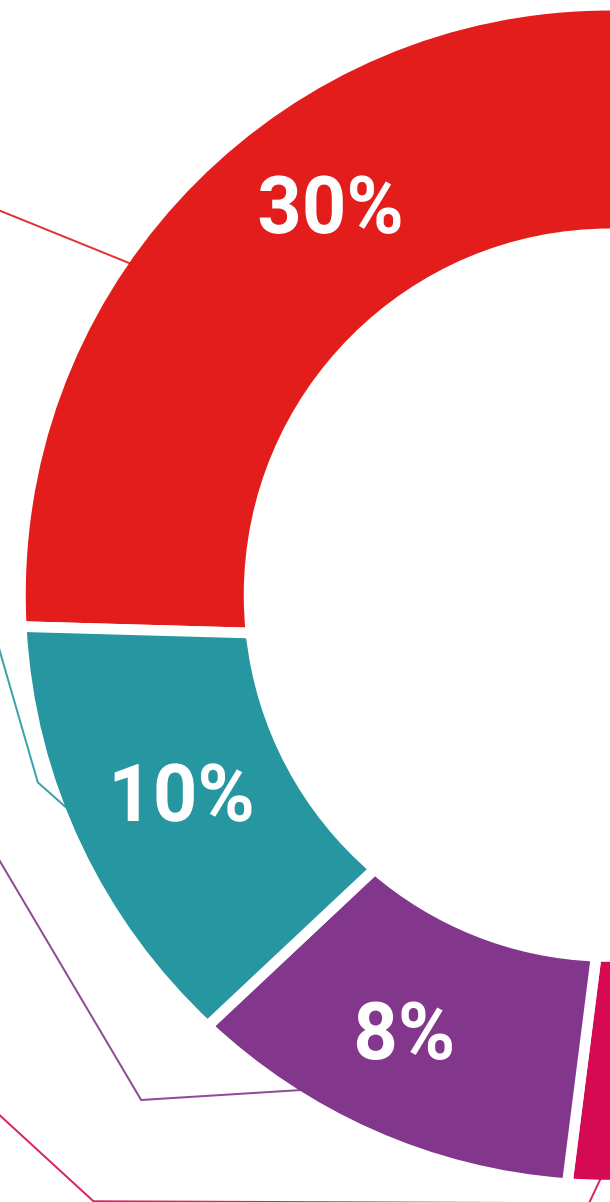
### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



# 10 Certificate

The Hybrid Master's Degree in Road Construction, Maintenance and Operation guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Master's Degree issued by TECH Global University.







“

*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This private qualification will allow you to obtain a **Hybrid Master's Degree diploma in Road Construction, Maintenance and Operation** 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.

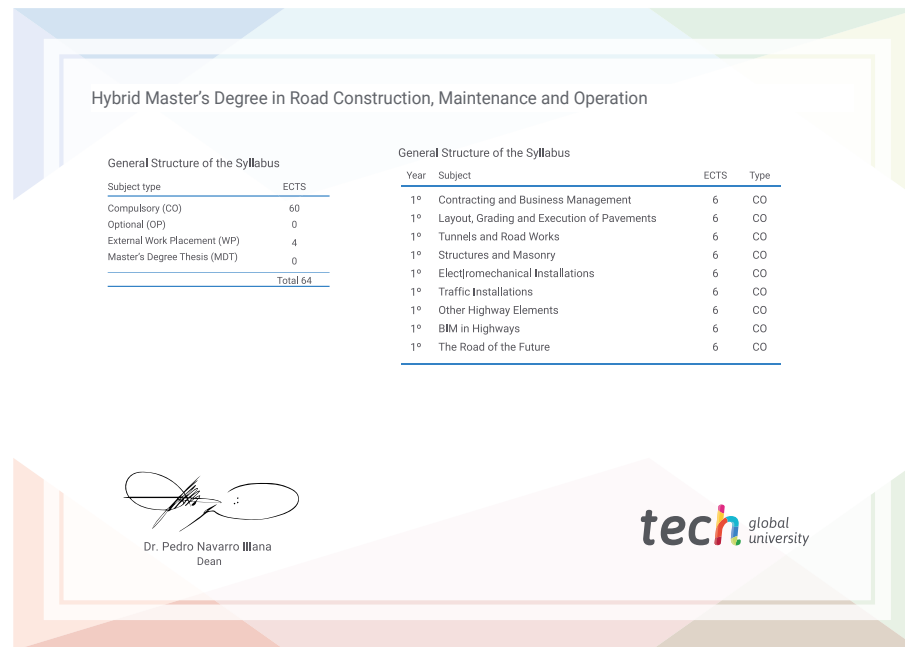
This **TECH Global University private qualification**, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Hybrid Master's Degree in Road Construction, Maintenance and Operation**

Modality: **Hybrid (Online + Internship)**

Duration: **12 months**

Credits **60 + 4 ECTS**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.



**Hybrid Master's Degree**  
Road Construction,  
Maintenance and Operation

Modality: Hybrid (Online + Internship)

Duration: 12 months

Certificate: TECH Global University

Credits 60 + 4 ECTS



# Hybrid Master's Degree Road Construction, Maintenance and Operation

