

PRACTICAL COURSE IN RAILWAY ENGINEERING

TITLE OF THE COURSE	Hours (1)	Cost EUROS (incl. VAT)	OBJECTIVES (CONTENTS below)
Practical course in railway engineering. BEGINNERS LEVEL	100	1200	The objective is to introduce the student to the railway sector by learning and consolidating the basic concepts necessary for the design. Useful for project managers and project leaders (to build a solid skills base)

(1) AVERAGE ESTIMATE: Duration with minimum skills base and maximum benefit. Possible shorter duration depending on the initial knowledge and the degree of in-depth study.

ORGANIZED AND PROVIDED

<https://kimes.es/>



MODALITY

On line - on EvolCampus elearning platform

PARTNERS

The logo for Azvi, featuring the word 'Azvi' in a bold, blue font with a stylized double slash symbol to its right.

<https://www.azvi.es/>

The logo for consultrans, featuring the word 'consultrans' in a green, pixelated font.

<https://www.consultrans.es/>

COURSE CONTENT

PDF texts	Additional development exercises
Tutorial videos teachers	Online teacher assistance
Multiple choice tests	Diploma from the platform at the end of the course

WHO IS THE COURSE DESIGNATED FOR?

- **Professionals** from the private or public railway sector whose objective is to obtain a theoretical and practical knowledge of the purely railway disciplines of a project in the field of civil engineering.
- Engineering **students** or recent graduates who wish to work in the railway sector.

HOW IS THE COURSE CONDUCTED AND PROGRESSED?

Studying the CHAPTERS in order, watching videos, passing exams and some additional exercises.

(information will be available at the end of the course indefinitely upon request).

COURSE PRESENTATION - WHAT DOES IT PROVIDE?

The study of an engineering degree entails key and theoretical learning necessary to be able to develop the profession with guarantees. However, there are 2 aspects that cannot be developed at university level:

- Specialization in a specific engineering sector
- Theoretical and practical knowledge acquired over many years of developing railway projects.

1. GENERAL PHILOSOPHY OF THE COURSE

The course is designed in a unique and differential way so that the student **accelerates in a remarkable way the training process and the acquisition of experience** in a railway engineering company in the field of **CIVIL RAILWAY ENGINEERING**.

- It includes the necessary theoretical knowledge (far beyond what can be found in any general railway book), for the designing and future relations with clients.
- The different chapters include numerous practical examples of real case scenarios, with data, images, photographs, etc., not only from Spain, but also from different countries, especially in America. In some cases, it is accompanied by video tutorials given by the teaching staff.
- Most of the information included is not to be found in the existing bibliography, and the theoretical and practical content is of unsurpassed quality, as it reflects the experience of the teachers of this course, all of whom have more than 25 years of experience in the railway sector in all types of railway projects and systems.
- The main regulations needed for consultancy in professional development are analysed: ADIF and AREMA, with practical examples of real projects.
- A considerable list of practical track alignment and cross-section tools, which will be very useful in the real challenge of design and relationships with the client.

2. KEY COURSE OBJECTIVES

- Acquire a knowledge and global vision of railway engineering from a consultancy point of view with a **predominantly practical character** (without forgetting the necessary **theoretical basis**).
- To consolidate a solid technical and management base that will allow for a successful participation in the design of railway projects (in the broadest sense of the term) at international level.
- To have the ability to deal with real project problems and to solve them directly or through management.
- Obtain a global vision for the management of a project and the essential interfaces with the track alignment and railway cross section, activities that constitute the heart of the project.
- Although the main objective of the course focuses on project design consultancy, it includes an introductory chapter on railway operation, which we consider essential to know how to efficiently and comprehensively design the track alignment of a railway project.
- The course covers the **railway transport mode in its maximum expression**, including Light Rail or Tramway, Tram-Train, Heavy Metro, conventional train, mixed traffic including freight, up to High Speed.

PRACTICAL COURSE IN RAILWAY ENGINEERING. INTRODUCTORY LEVEL

H	VC	P	NO.	COURSE TOPICS
1.5			1	RAILWAYS TRANSPORT SYSTEMS
2			2	ENGINEERING PHASES. ORGANIZATION OF A PROJECT 2.1 Different phases of consulting 2.2 Organization of a railway project
20	1	1	3	TRACK LAYOUT 3.1 Theoretical concepts 3.2 Definition of the layout axis in a project 3.3 The clothoid transition curve 3.4 Track layout variables 3.5 Example of layout calculation 3.6 Regulations
10	1		4	VERTICAL PROFILE 4.1 Theoretical concepts 4.2 Definition of the layout axis in a project 4.3 Variables of the vertical profile 4.4 Alignment of vertical profile 4.5 Regulations
15			5	TYPE SECTIONS 5.1 Basic notions 5.2 Standard earth cross sections 5.3 Singular cross sections. Viaduct 5.4 Singular cross sections. Tunnel 5.5 Singular cross sections. Urban areas
10			6	SUPERSTRUCTURE 6.1 Basic concepts 6.2 Rails 6.3 Sleepers 6.4 Fasteners and base plates 6.5 Ballast 6.6 The track without ballast 6.7 Railway turnouts
7.5			7	PLATFORM AND SUPERSTRUCTURE 7.1 Design concepts. Regulations 7.2 Calculation using ADIF regulations 7.3 Calculation using UIC regulations
4			8	ROLLING STOCK AND RAILWAY OPERATION 8.1 Rolling stock. Characterization and characteristic curves 8.2 Railway simulations

TOTAL HOURS (maximum) = 70



The development and content of the course were made possible thanks to the participation of railway engineering professionals with extensive experience in the consultancy sector.

CV of the main teaching staff:
Javier Cortacans & Manuel Cuadrado

REGISTRATION FORM

STUDENT DATA (1)	
FAMILY NAME	
FIRST NAME	
IDENTITY CARD	
ADDRESS	
CITY - COUNTRY	
E-MAIL	
TELEPHONE	

INVOICE DATA (if different from 1)	
COMPANY NAME	
CIF COMPANY (OR SIMILAR)	
FISCAL ADDRESS	
CITY - COUNTRY	
E-MAIL	
MOBILE PHONE	
CONTACT PERSON	

KMS Ingenieros y Arquitectos (KIMES CONSULTORES S.L.U.) is registered, through FUNDAE, in the Spanish State Register of Training Entities in order to be able to provide training.

Therefore, **the course is reimbursable** if the hiring company complies with the provisions of the "Royal Decree 694/2017, of 3 July, which develops Law 30/2015, of 9 September, which regulates the Vocational Training System for Employment in the workplace".

For support in the management of the bonus, **contact** us

CONTACT DETAILS

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 Telephone: +34 629 80 47 98

- REGISTRATION FOR THE COURSE**
1. Fill out this form (pdf or by hand) and send it by e-mail
 2. Bank transfer to the following account:
 SANTANDER BANK: ES57 0049 2032 5928 1402 2292
 (OWNER: KMS Ingenieros)
 3. Send form and proof of transfer to the contact email address
 (once the income is done)
 4. The invoice is issued and sent immediately.
 5. The learner is given access to the EvolCampus elearning platform.

INTELLECTUAL PROPERTY

The intellectual property of the 4 courses has been registered for copyright protection and is protected in 181 countries in accordance with the Berne Convention.

[\(data protection document for the four courses\)](#)

DATA PROTECTION

KIMES CONSULTORES SLU is responsible for the processing of your personal data and informs you that these data will be processed in accordance with the provisions of Regulation (EU) 2016/679, of 27 April (GDPR), and Organic Law 3/2018, of 5 December (LOPDGDD), for the purpose of maintaining a business relationship (based on a contractual relationship, legal obligation or legitimate interest) and keep them for no longer than necessary to maintain the purpose of processing or while there are legal requirements that dictate their custody. The data will not be communicated to third parties, unless legally obliged to do so. You are also informed that you may exercise your rights of access, rectification, portability and deletion of your data and those of limitation and opposition to their processing by contacting KIMES CONSULTORES SLU in C/ Uruguay, 6 41807 Espartinas (Seville). E-mail: jcortacans@kmsingenieros.es and the complaint to www.aepd.es.