28726 - Construction of Railway Infrastructures

Información del Plan Docente

Academic Year	2016/17
Academic center	175 - Escuela Universitaria Politécnica de La Almunia
Degree	423 - Bachelor's Degree in Civil Engineering
ECTS	6.0
Course	
Period	Second semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process designed for this subject is based on the following:

Strong interaction between the teacher/student. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

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The current subject is conceived as a stand-alone combination of contents, yet organized into three fundamental and complementary forms, which are: the theoretical concepts of each teaching unit, the solving of problems, at the same time supported by other activities.

The organization of teaching will be carried out using the following steps:

— **Theory Classes** : Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them in topics and or sections, interrelating them.

— **Practical Classes** : The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.

— **Individual Tutorials** : Those carried out giving individual, personalized attention with a teacher from the department. Said tutorials may be in person or online.

5.2.Learning activities

The programme offered to the student to help them achieve their target results is made up of the following activities

Involves the active participation of the student, in a way that the results achieved in the learning process are developed, not taking away from those already set out, the activities are the following:

— **Face-to-face generic activities** :

● **Theory Classes** : The theoretical concepts of the subject are explained and illustrative examples are developed as support to the theory when necessary.

● **Practical Classes** : Problems and practical cases are carried out, complementary to the theoretical concepts studied.

— **Generic non-class activities** :

● Study and understanding of the theory taught in the lectures.

● Understanding and assimilation of the problems and practical cases solved in the practical classes.

● Preparation of seminars, solutions to proposed problems, etc.

● Preparation of the written tests for continuous assessment and final exams.

The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the trimester, in other words, 10 hours per week for 15 weeks of class.

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A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the subject file in the Accreditation Report of the degree, taking into account the level of experimentation considered for the said subject is moderate.

5.3.Program

UNIT DIDACTICS I: RAIL TRANSPORT.

TOPIC 1: HISTORY AND DEVELOPMENT OF THE RAILWAY.

TOPIC 2: THE RAILROAD.

TOPIC 3: ESSENTIAL FEATURES OF RAIL TRANSPORT.

TOPIC 4: GENERAL CONSIDERATIONS ON THE TRACK.

TOPIC 5: MAGNETIC LEVITATION TRAINS.

UNIT DIDACTICS II: DESING AND MAINTENANCE OF RAILWAY WORKS.

TOPIC6: RAIL.

TOPIC 7: SLEEPERS.

TOPIC 8: SMALL VIA MATERIAL.

TOPIC9: THE PLATFORM.

TOPIC10: VIA ON BOARD.

TOPIC 11: VIA SEAMLESS.

TOPIC12: CROSSINGS.

UNIT DIDACTICS III: ROLLING STOCK, ELECTRIFICATION, SIGNALLING AND INSPECTIONS

TOPIC 13 : TYPOLOGIES AND COMPONENTS.

TOPIC 14: VIA MACHINERY

TOPIC 15: RAILWAY ELECTRIFICATION.

TOPIC 16: SIGNAGE.

TOPIC 17: INSPECTIONS.

UNIT DIDACTICS IV : SIZING

TOPIC 18: RAILWAY ROLLING.

TOPIC 19: VIA GEOMETRY.

TOPIC 20: HIGH SPEED.

TOPIC 21: RAILWAY INFRASTRUCTURE CONSTRUCTION

5.4.Planning and scheduling

Calendar of sessions and presentation of labored then, are shown the contents offered at teaching weekly.

These correspond to the issues presented in the content of the subject. (They may be subject to change to adapt to changes and unforeseen events in the school calendar).

Week 1:didactic unit I.

Week 2 didactic unit I

Week 3: didactic unit I

Week 4: didactic unit II

Week 5: didactic unit II.

Week 6: didactic unit II.

Week 7: didactic unit III.

Week 8: didactic unit III.

Week 9: didactic unit III.

Week 10: didactic unit III.

Week 11: didactic unit IV.

Week 12: didactic unit IV.

Week 13: didactic unit IV.

Week 14: didactic unit IV.

Week 15: Evaluation

Final exams dates will be published formally in http://www.eupla.es/secretaria/academica/examenes.html. The final calendar of the corresponding academic year can be viewed on the website of the school http://www.eupla.es.

Contents of the subjects essential to getting the results of learning

Las guidelines followed to elaborate the contents were as follows:

- respect the contents in memory of verification

- developed an agenda whose chapters generally match the titles of the specified program.When it was not thus made was because its extension and/or correlation was included in another.

- selected a large bibliography of recognized technical, classical and current editions

The program of the course is structured around two complementary content components:

- theorists.

- practical.

5.5.Bibliography and recomended resources

- Losada, Manuel.. Curso de ferrocarriles./Manuel Losada. - 1ª edc Madrid] : [Universidad Politécnica de Madrid, E.T.S. Ingenieros de Caminos, Canales y Puertos], 1991. [Cuadernos nº I: El ferrocarril y el transporte. -- II: Estructura de la vía. -- III: Mecánica de la vía. -- IV: Geometría y calidad de vida. -- V: Explotación técnica.]
- Losada, Manuel. Curso de ferrocarriles. Cuaderno II, Estructura de la via / Manuel Losada. - 1edc [Madrid] : [Universidad Politécnica de Madrid, Cátedra de Ferrocarriles], [1987 [Cuaderno II, Estructura de la via]
- Losada, Manuel. Curso de ferrocarriles. Cuaderno III, Mecánica de la vía /Manuel Losada, J. Quereda. - 1 edc Madrid : Colegio de INgenieros de Caminos, Canales y Puertos, Servicio de Publicaciones, 2001
- Losada, Manuel. Curso de ferrocarriles. Cuaderno IV, Geometría y calidad de la via / Manuel Losada. - 1 edc Madrid] : [Universidad Politécnica de Madrid, Cátedra de Ferrocarriles], 1989
- González Fernández, Francisco Javier.. Ingeniería ferroviaria / Francisco Javier González Fernández; Julio Fuentes Losa. 1edc Madrid : Universidad Nacional de Educación a Distancia, 2010.
- Álvarez Stein, Alejandro. Técnica ferroviaria / Alejandro Álvarez Stein. - 1ª edc Madrid : Tébar, 2012

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- Villaronte Fernández-Villa, Juan Antonio.. Tecnología e ingeniería ferroviaria : tecnología de la vía / Juan Antonio Villaronte . - 4ª ed. Collado Villalba (Madrid) : Delta Publicaciones, 2012.
- Villaronte Fernández-Villa, Juan Antonio. Ingeniería y tecnología ferroviaria :procedimientos constructivos e instalaciones / Juan Antonio Villaronte Fernández-Villa. - 3ª ed Collado Villalba (Madrid) : Delta, 2011