

## SUBJECT TEACHING GUIDE

591 - Conservation and Exploitation of Infrastructures

Master's Degree in civil Engineering, Canal and Port Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Master's Degree in civil Engineering, Canal and Port Engineering			Type and Year	Compulsory. Year 2
Faculty	School of civil Engineering				
Discipline	CONSERVATION AND EXPLOITATION OF INFRASTRUCTURES				
Course unit title and code	591 - Conservation and Exploitation of Infrastructures				
Number of ECTS credits allocated	4,5	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS
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Other lecturers	AMADOR GAFO ALVAREZ EUGENIO MIGUEL LASO LOPEZ-NEGRETE

### 3.1 LEARNING OUTCOMES

- Apply the necessary concepts to carry out a technical-economic planning for the operation of an infrastructure.
- Apply the regulations and legislation for the understanding and elaboration of the different existing models of contracts for the conservation and exploration of infrastructure
- Monitor and control comprehensive conservation contracts.
- Categorize and plan the different infrastructure conservation activities.
- Know the form of implementation and the most important aspects of an infrastructure management plan.
- Identify different techniques for monitoring infrastructures and corrective solutions
- Know the operation of the infrastructure control centers of public entities.
- Select machinery and equipment necessary for the conservation of infrastructures.
- Know different models of exploitation of large infrastructures.

### 4. OBJECTIVES

The main objective of the subject is to train the student to plan and manage the conservation and maintenance of different types of public works during their exploitation, as well as to know the contractual models, and the forms of public-private collaboration, in relation to financing, construction and operation of public works and services.

### 6. SUBJECT PROGRAM

#### CONTENTS

1	General concepts of the conservation and maintenance of infrastructures. Need for Conservation of Infrastructures. Protocols for the management and maintenance of infrastructures.
2	Management of conservation and maintenance of roads and highways & Tunnel conservation and maintenance management. (Control and conservation centers, machinery and equipment, equipment for winter management, emergencies, alert systems).
3	Management of the conservation and maintenance of roads and highways. Conservation centers, machinery and equipment for road maintenance. Winter management machinery. Management of the conservation and maintenance of tunnels. Control systems, emergencies and warning systems
4	Conservation and exploitation of ports. (Control and conservation centers, machinery and equipment, equipment for winter management, emergencies, alert systems)
5	Conservation and exploitation of airports. (Control and conservation centers, machinery and equipment, equipment for winter management, emergencies, alert systems).
6	Conservation and exploitation of dams and hydraulic works. (Control centers, control equipment, emergencies, alert systems).
7	Exploitation, conservation and maintenance of urban infrastructures. (Control and conservation centers, machinery and equipment, emergencies, alert systems).
8	Contractual models for the construction and operation of infrastructures. European directives and Spanish legislation. Common provisions in the preparation and award of public contracts.
9	Fiscal and financial aspects in the planning of public investments. Public - private collaboration in financing and exploitation.
10	The works concession contract. The works concession contract. Practical examples.
11	Management models in the operation of infrastructures and public services. The service concession contract and the service contract.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Examination of the theoretical part	Written exam	Yes	Yes	50,00
Exercises and practices	Work	No	Yes	40,00
Participation in visits to infrastructures.	Others	No	No	10,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>The course consists of three parts, which will be evaluated independently: a) Written exam, with a weight of 50% of the total grade; b) evaluation of exercises and work of the visits, with a weight of 40% of the total mark and c) Attendance and participation in visits, with a weight of 10% of the total mark.</p> <p>The minimum score for parts a) and b) must be 4 points. In any case, the final grade for the course, obtained by weighting the three grades as indicated, must be equal to or greater than 5 points.</p> <p>Students who do not pass the course in the ordinary call may apply for recovery in the extraordinary call, having to do so to parts a) and b) if the grade is less than 4 points. If a student does not obtain the minimum grade of 4 points required to pass the written exam, the overall grade for the subject will be the lowest value between 4.9 and the weighted average of all the assessment tests.</p> <p>Only for duly justified reasons (eg sanitary restrictions) the evaluation tests may be organized remotely, with prior authorization from the Center's Management.</p> <p>Note: According to RD 1125/2003 on the European credit system and the system of qualifications in university degrees of an official nature and valid throughout the national territory, the results obtained by the student in each of the subjects of the study plan They will be scored based on the following numerical scale from 0 to 10, with an expression of one decimal place, to which their corresponding qualitative score may be added: 0.0-4.9: Fail (SS) 5.0-6.9: Pass (AP) 7.0-8.9: Good (NT) 9.0-10: Excellent (SB)</p>				
<b>Observations for part-time students</b>				
<p>The student who follows the subject part-time must take a single exam, which will consist of a 1st part (50%) in relation to the theoretical contents taught in class, and a 2nd part (50%) in relation to the exercises proposed in class and visits made.</p>				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

- Apuntes de la asignatura alojados en la plataforma Moodle
- Vialidad: conservación y explotación de carreteras. Cepeda Medina, José Ángel y García Cerezo, Pablo. Tornapunta. 2016, 1ª edición: febrero 2016.
- La gestión de la explotación de carreteras mediante indicadores. Carlos Casas Nagore. Asociación Técnica de Carreteras, [2007]
- Conceptos para la explotación y planificación de puertos. Pascual Pery Paredes. Universidad Politécnica de Madrid, Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos, 2003
- Régimen jurídico de los aeropuertos : servicio público y explotación comercial. José Esteve Pardo. Tirant lo Blanch, 2001
- Airport operations. Norman J. Ashford... [et al.]. McGraw-Hill, cop. 2013.
- Ingeniería de presas : presas de fábrica. Joaquín Díez-Cascón Sagrado, Francisco Bueno Hernández. Servicio de Publicaciones de la Universidad de Cantabria. 2001.
- Maquinaria y medios auxiliares en obras ferroviarias. Jose María del Campo Yagüe. ETSICCP Madrid. 2009,
- Régimen Jurídico de la Construcción y Explotación de Obras Públicas.- Vega Labella, José.- 2012
- Instrumentos Españoles de Colaboración Público – Privada: El Contrato de Concesión de Obras Públicas.- Menéndez Menéndez, Adolfo.- Ed. Civitas Ediciones.- 2010.
- La Colaboración Público – Privada en la Ley de Contratos del Sector Público: Aspectos Administrativos y Financieros.- Dorrego de Carlos, A.- Ed. La Ley- Actualidad, 2009.
- Gestión de ofertas y licitaciones públicas.- Castel Aznar, Luis.- Colección Senior CICCPC, 2019.
- Proyectos de Participación Público Privada para la gestión y financiación de infraestructuras.- González González, O.- 2016.
- Sistema de gestión de las actividades de conservación ordinaria y ayuda a la vialidad, GSM. - Ministerio de Fomento. - Dirección General de Carreteras. - 1999.