

SUBJECT TEACHING GUIDE

G1975 - Transport Systems

Degree in Civil Engineering First Degree in Civil Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering First Degree in Civil Engineering			Type and Year	Compulsory. Year 3 Compulsory. Year 3
Faculty	School of civil Engineering				
Discipline	FUNDAMENTALS OF TRANSPORT ENGINEERING				
Course unit title and code	G1975 - Transport Systems				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS				
Name of lecturer	JOSE MARIA DIAZ PEREZ DE LA LASTRA				
E-mail	josemaria.diaz@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 1. DESPACHO (1007)				
Other lecturers	JOSE LUIS MOURA BERODIA				

3.1 LEARNING OUTCOMES

- Conceptualize transportation systems and their relationships with the territorial and economic system.
- Recognize the specific characteristics and regulations of each transport mode (road, rail, maritime, air and freight).
- Apply the knowledge and methods necessary to diagnose the accessibility of a territory.
- Apply basic techniques and tools to transport demand analysis and forecasting.
- Analyze and evaluate transport systems from the point of view of their externalities

4. OBJECTIVES

- To introduce the student to Transport Engineering, from the perspectives of the infrastructure and the transportation services.
- Notice the link between transportation (and its infrastructures) and the structuring of the territory. Use accessibility indicators to analyse transport networks.
- Learn the peculiarities of mobility in urban areas and mass transit systems. Understand the basic concepts of transport planning and travel demand study.

6. SUBJECT PROGRAM

CONTENTS	
1	INTRODUCTION AND CHARACTERISTICS OF TRANSPORT SYSTEMS. Transport as a system. Transport infrastructures and economic processes. Characteristics of transport modes and regulatory framework.
2	TRANSPORT AND TERRITORIAL SYSTEM. Concept and measure of accessibility. Types of accessibility indicators. Networks models to study accessibility.
3	URBAN TRANSPORT. Mobility in urban areas. Collective transport. Urban transport networks. Design and operation of urban transport systems.
4	TRANSPORT DEMAND. Concept of demand. Analysis of the current passenger and freight demand. Potential demand. Demand models.
5	TRANSPORTATION EXTERNALITIES. Externalities. The impacts on the environment. Other effects.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Final Exam	Written exam	Yes	Yes	60,00
Work. Final deliverable.	Work	No	Yes	30,00
Face-to-face activity in the classroom.	Others	No	No	10,00
TOTAL				100,00
Observations				
Only for duly justified reasons (e.g. health restrictions), assessment tests may be organised at a distance, with the prior authorisation of the Centre's Management.				
Students who request advanced evaluation of the subject will take a written exam of the subject with theoretical and practical content.				
Observations for part-time students				
Part-time students must present the Final Work and take the final written exam for the subject.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS**BASIC**

- Apuntes Asignatura.
- Anuario Estadístico del Ministerio de Fomento.
- Izquierdo de Bartolomé, R. (2001). Transportes: Un enfoque integral. Servicio de Publicaciones CICCIP. Madrid. (1ª ed. 1994).
- Juan de Dios Ortúzar y Luis G. Willumsen (2008) "Modelos de Transporte". Traducción de Ángel Ibeas Portilla y Luigi dell'Olio. Ediciones de la Universidad de Cantabria.
- Borja Alonso, José Luis Moura, Ángel Ibeas y Luigi dell'Olio (2012) "Ejemplos Prácticos de Sistemas de Transporte". Servicio de Publicaciones de la ETS de Ingenieros de Caminos, Canales y Puertos.
- Cortés, R. (2018) "Dirección de Operaciones en Empresas de Transporte Público"