SUBJECT TEACHING GUIDE

626 - TRANSPORT PLANNING AND MANAGEMENT

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

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	Master's Degree in civil Engineering, Canal and Port Engineering			Type and Year	Compulsory. Year 1
Faculty	School of civil Engineering				
Discipline	TRANSPORT PLANNING AND MANAGEMENT				
Course unit title and code	626 - TRANSPORT PLANNING AND MANAGEMENT				
Number of ECTS credits allocated	4,5	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS
Name of lecturer	JOSE LUIS MOURA BERODIA
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Other lecturers	BORJA ALONSO OREÑA ANDRES RODRIGUEZ GUTIERREZ MAIRA MILENA DELGADO LINDEMAN

3.1 LEARNING OUTCOMES

- Manage the basic models to face planning and management processes of transportation systems.
  Analyze and evaluate transport systems from a multi-criteria point of view: economic, social and environmental.
  Select and establish alternatives for traffic management and public transport in urban and metropolitan areas .
  Identify, size and design the different elements and facilities of an airport

4. OBJECTIVES

The general objective is to transmit to the students the basic concepts of planning and operation of transport systems so that they are able to study the interaction between the demand and supply of mobility in order to estimate traffic flows and understand how they vary in function of certain variables.

Familiarize the student with the evaluation techniques of transportation projects and with the specific use of mico and macro simulation software.

6. SUBJECT PROGRAM

CONTENTS	
1	INTRODUCTION: TRANSPORTATION PLANNING AND MANAGEMENT. - Systems approach: transport system and activity system - Supply, demand and user behavior. - Modeling approaches and the classical transport model. - From planning to transport management.
2	SAMPLING AND DATA COLLECTION. - Sampling theory. - Surveys of Revealed Preferences. - Surveys of Declared Preferences. - The spatial model: The transport network and zoning.
3	TRAVEL GENERATION MODELS. - RLM models. - Multiple Classification Analysis. - Simplified travel production models.
4	ZONAL DISTRIBUTION MODELS - Types of models. - The gravitational model: maximization of entropy. Bi-proportional model and Tri-proportional approach. - Estimation of matrices based on capacity. Aggregate models of modal distribution-distribution.
5	MODAL CHOICE MODELS. Discrete choice models (I): Multinomial Logit. Discrete choice models (II): Hierarchical Logit. Specification and estimation of discrete choice models.
6	MODELS OF ASSIGNMENT TO PRIVATE AND PUBLIC TRANSPORTATION - Network theory: the problem of minimum routes. - Assignment without congestion: All or nothing and stochastic allocation. - Assignment to public transport lines.
7	PLANNING AND MANAGEMENT OF URBAN AND METROPOLITAN TRANSPORTATION SYSTEMS. - Combined modal split-allocation models - Microsimulation models - Traffic management models - Public transport management models
8	OTHER TRANSPORTATION SYSTEMS - Airport Engineering - Freight transport and city Logistic
9	ECONOMICS AND FINANCING OF TRANSPORT SYSTEMS: operating costs, external costs and evaluation of transport projects.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Course work	Work	No	Yes	40,00
Final exam	Written exam	Yes	Yes	50,00
Proposed Tasks	Others	No	No	10,00
TOTAL				100,00

Observations

• As a general criterion and unless something different is specified in this guide , a student may only appear for recovery of those activities that have not been passed, that is, in which they have not obtained a minimum grade of five out of ten.
• As a general criterion and unless something different is specified in this guide , in the recovery period the evaluation procedure of an activity will be the same as that of the activity that originates it.
• Only for duly justified reasons (eg sanitary restrictions) the evaluation tests may be organized remotely, with prior authorization from the Center's Management.

Observations for part-time students

Attendance is not mandatory, but completion of the proposed course work is mandatory.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Ortuzar, J. de D., & Willumsen, L. G. (2008). Modelos de transporte (Vol. 1). Ed. Universidad de Cantabria. Traducción de Ángel Ibeas Portilla y Luigi dell'Olio

Ibeas, A., González, F., dell'Olio, L. y Moura, J.L. (2015) "Manual de Encuestas de Movilidad. Preferencias Reveladas". Charleston (USA), CreateSpace

Ibeas, A., González, F., dell'Olio, L. y Moura, J.L. (2015) "Manual de Encuestas de Movilidad. Preferencias Declaradas". Charleston (USA), CreateSpace

Cordera, R., Ibeas, Á., dell'Olio, L., & Alonso, B. (2017). Land Use–Transport Interaction Models. CRC press.