COMILLAS
UNIVERSIDAD PONTIFICIA
ICAI ICADE CIHS

GUÍA DOCENTE
2025 - 2026

FICHA TÉCNICA DE LA ASIGNATURA

Datos de la asignatura

Nombre completo	Global Transportation
Código	DIM-MMS-521
Impartido en	Máster Universitario en Ingeniería Industrial + Máster in Motorsport, Mobility and Safety [Segundo Curso] Master in Motorsport, Mobility and Safety [Primer Curso]
Nivel	Master
Cuatrimestre	Semestral
Créditos	3,0 ECTS
Carácter	Obligatoria
Departamento / Área	Departamento de Ingeniería Mecánica
Responsable	Francisco J. López Valdés

Datos del profesorado

DATOS ESPECÍFICOS DE LA ASIGNATURA

Contextualización de la asignatura

Aportación al perfil profesional de la titulación

This course will focus on the demands and characteristics of current mobility. The course will provide an overview of how safe mobility systems are implemented worldwide. The course will cover existing initiatives to implement road safety observatories in different regions/countries of the world. A large proportion of the course will focus on special seminars discussing innovative forms of mobility.

Prerrequisitos

Although there are not mandatory prerequisites, prospective students are recommended to learn basic concepts of injury prevention, restraint systems and biomechanics.

Competencias - Objetivos

Competencias

Specific Competences

SC1: Understand the key mobility and safety challenges in different world regions, with emphasis on social, infrastructural and vehicle-related factors.

SC2: Analyze the historical evolution and effectiveness of road safety measures in Europe and globally.

SC3: Recognize the structure and challenges of mobility systems across various transport modes: road, rail, maritime and air.

SC4: Identify safety regulations and evaluation programs (e.g. Latin NCAP) and their impact on road safety in different countries, especially in developing contexts.

SC5: Evaluate the role of two-wheeled vehicles in urban mobility and assess specific safety concerns and regulatory responses.

Transversal Competences (EU Key Competences)

TC1 – Citizenship Competence: Understanding the social and global implications of mobility and safety, and contributing to sustainable and equitable transport policies.

TC2 – Cultural Awareness and Expression: Recognizing how cultural, economic and regulatory differences affect transport systems and safety approaches worldwide.

TC3 – Learning to Learn: Ability to update knowledge based on ongoing changes in mobility, safety standards and technological evolution in transport.

TC4 – Communication Competence: Effectively communicating findings, trends, and proposals regarding transport systems to both specialized and general audiences.

TC5 – Digital Competence: Using digital tools to analyze transport data, mobility trends, and road safety indicators.

TC6 – Entrepreneurial Competence: Identifying opportunities for policy improvement, innovation and collaboration in the field of safe and sustainable mobility.

Resultados de Aprendizaje

K1: Describe global differences in mobility patterns and the contextual factors that influence transport systems in various regions.

K2: Understand road traffic injuries as a global public health issue, including their epidemiology and socio-economic consequences.

K3: Summarize the history of road safety policies and their evolution, both in Europe and globally.

K4: Explain the role of international safety programs such as Latin NCAP and how they affect vehicle design and regulation in Latin America.

K5: Understand the specific role of motorcycles and mopeds in urban mobility and associated safety and regulatory challenges.

K6: Gain introductory knowledge of the characteristics, constraints and safety considerations of maritime, railway and air transport systems.

S1: Compare and assess road safety strategies and outcomes between different world regions and propose context-sensitive improvements.

S2: Critically analyze mobility systems across different modes (road, maritime, rail, air) and evaluate their strengths and weaknesses from a safety and efficiency standpoint.

S3: Interpret transport-related data to assess trends in mobility and safety, using international sources and indicators.

S4: Apply knowledge of regulatory frameworks and public health strategies to assess the effectiveness of transport safety policies.

S5: Communicate technical and policy-relevant insights in a clear and structured manner.

C1: Demonstrate critical awareness of transport equity, sustainability and safety in a global context.

C2: Engage with multidisciplinary content (engineering, public health, regulation, policy) to develop integrated solutions to mobility challenges.

C3: Show initiative and responsibility in proposing safety measures or policy innovations adapted to the needs of different regions or transport modes.

C4: Reflect on their own learning and professional role in shaping safe and sustainable transport systems.

BLOQUES TEMÁTICOS Y CONTENIDOS

Contenidos – Bloques Temáticos

1. Global mobility and safety - (14 h, Maria Segui-Gomez)
    1. Mobility characteristics in different world regions
    2. Road traffic injuries as a global health problem
    3. History and progress of road safety measures: Europe and Global
2. Road transport of goods – (4 h, Jaime Baquedano, Miriam)
3. Vehicle safety in Latin American countries: the case of LatinNCAP (2 h, Gonzalo Casas).
4. Safety and mobility of motorcycles (4 h, Sergio Crespo, ANESDOR)
    1. Contribution of motorcycles and mopeds to mobility
    2. Vehicle safety regulations
5. Maritime transport (2h, Alfredo Pardo de Santayana, IME)
6. Railway transport (2h, Carlos Mateo, Bombardier)
7. Air transport (2h, Pablo Torrejón, ENAIRE)

METODOLOGÍA DOCENTE

Aspectos metodológicos generales de la asignatura

EVALUACIÓN Y CRITERIOS DE CALIFICACIÓN

- Course project on global mobility
- Quizzes from individual lectures

Calificaciones

Standard evaluation at the end of the term:

- Course project on global mobility and safety (50%)
    - More specifically, 50% on final group paper and presentation,10% mid-term test, 15% student reflection on class learnings, and 25% active classroom and group participation.
- Quizzes from individual lectures (50%)

Additional evaluation during July (Retake):

- Course project on global mobility (50%)
- Quizzes from individual lectures (50%)

BIBLIOGRAFÍA Y RECURSOS

Bibliografía Básica

- Materials published by several international and national organizations, reporting on the status of road safety around the world (updated versions to be provided by course instructors).
- Rune Elvik, Truls Vaa, Alena Hoye, Michael Sorensen. The Handbook of Road Safety Measures: Second Edition, Emerald Group Publishing, 2009