

## FICHA TÉCNICA DE LA ASIGNATURA

Datos de la asignatura	
Nombre completo	Aerodinámica y CFD
Código	DIM-M2S-501
Impartido en	Máster en Ingeniería para la Movilidad y Seguridad/Master of Engineering in Mobility and Safety [Primer Curso]
Nivel	Master
Cuatrimestre	Anual
Créditos	3,0 ECTS
Carácter	Obligatoria
Departamento / Área	Departamento de Ingeniería Mecánica

Datos del profesorado	
Profesor	
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Departamento / Área	Departamento de Ingeniería Mecánica
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## DATOS ESPECÍFICOS DE LA ASIGNATURA

Contextualización de la asignatura
<p><b>Aportación al perfil profesional de la titulación</b></p> <p><b>Specific Knowledge:</b> The course provides specific knowledge about aerodynamics and the use of Computational Fluid Dynamics (CFD) to analyze and solve aerodynamics-related problems. This knowledge is crucial for engineers working in industries such as automotive, aerospace, and the energy sector, where aerodynamics is paramount.</p> <p><b>Technical Skills:</b> Students will learn to use CFD tools and software to simulate and analyze fluid flows around objects and vehicles. These technical skills are highly valued in the industry and can be applied to a variety of projects and sectors.</p> <p><b>Enhanced Design:</b> Understanding aerodynamics is essential for efficiently designing vehicles, buildings, and other objects that interact with airflow. An engineer who has completed this course will be better equipped to design products and structures that are more aerodynamic and, therefore, more efficient.</p> <p><b>Problem Solving:</b> CFD is a powerful tool for problem-solving related to aerodynamics. Students will learn how to identify and address complex fluid flow problems, which can help improve the performance and safety of different systems and products.</p> <p><b>Competitiveness in the Job Market:</b> Having experience in aerodynamics and CFD can make an engineer more competitive in the job market, as many companies seek candidates with specialized skills in this area.</p> <p><b>Innovation and Development:</b> Aerodynamics and CFD play a significant role in innovation and the development of new products and technologies. An engineer who has completed this course will be better prepared to contribute to innovative projects in their field.</p> <p>In summary, a course in aerodynamics and CFD can significantly enrich the professional profile of an engineer by providing specialized</p>



knowledge, valuable technical skills, and the ability to address complex aerodynamics-related problems across various industries

## Prerequisitos

Course on Fluid Mechanics

## Competencias - Objetivos

## BLOQUES TEMÁTICOS Y CONTENIDOS

### Contenidos – Bloques Temáticos

- Aerodynamics
- Introduction to CFD
  - Geometry and meshing
  - Domains, Boundary Conditions and Sources
  - Turbulence, solver settings and post-processing
  - Complete CFD workflow
  - Heat transfer
- Applications

## METODOLOGÍA DOCENTE

### Aspectos metodológicos generales de la asignatura

#### Metodología Presencial: Actividades

Classes are structured to learn and practice a specific concept

#### Metodología No presencial: Actividades

Students will be asked to solve application problems to work individually or in groups

## EVALUACIÓN Y CRITERIOS DE CALIFICACIÓN

- Test
  - Session test
  - Final exam
- individual and group assignments

### Calificaciones

Standard evaluation at the end of the term

- 30% test
  - 20 % session test

- 80 % final exam
- 70 % individual and group assignments

## **BIBLIOGRAFÍA Y RECURSOS**