

205061 - Introduction to Active Flow Control

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
 Teaching unit: 729 - MF - Department of Fluid Mechanics
 Academic year: 2019
 Degree: MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Teaching unit Optional)
 MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)
 MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Teaching unit Optional)
 ECTS credits: 3 Teaching languages: English

Teaching staff

Coordinator: Josep M Bergadà

Teaching methodology

Classes will be done via using power point or similar, the class will be active therefore the students will need to participate

Learning objectives of the subject

Study load

Total learning time: 75h	Hours large group:	27h	36.00%
	Hours medium group:	0h	0.00%
	Hours small group:	0h	0.00%
	Guided activities:	0h	0.00%
	Self study:	48h	64.00%

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Content

<p>Module 1</p>	<p>Learning time: 4h Theory classes: 2h Self study : 2h</p>
<p>Description: Active versus passive flow control.</p> <p>Related activities: Search information regarding actual applications of each control.</p>	
<p>Module 2</p>	<p>Learning time: 24h Theory classes: 8h Self study : 16h</p>
<p>Description: Fluidic oscillators. Evaluation of all existing devices an the field of its possible application.</p> <p>Related activities: The students will simulate the performance of one of these devices.</p>	
<p>Module 3</p>	<p>Learning time: 12h Theory classes: 6h Self study : 6h</p>
<p>Description: Boundary layer theory</p> <p>Related activities: Students will learn the boundary layer main equations and how the boundary layer modification is affecting the forces acting on the body.</p>	

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Module 4	Learning time: 35h Theory classes: 11h Self study : 24h
Description: Different applications of Active Flow control	
Related activities: In this module it will be analyzed the different applications of AFC, the ones existing, the ones expected and other possible future applications. The idea is to simulate a given case to observe the benefits and drawbacks of AFC	

Qualification system

The evaluation will be performed based on the assignments the students will undertake. two or three assignments will be done in groups of 3 people

Bibliography