

## 330524 - FLU - Fluid Dynamics

Coordinating unit: 330 - EPSEM - Manresa School of Engineering  
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering  
Academic year: 2019  
Degree: BACHELOR'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2017). (Teaching unit Compulsory)  
ECTS credits: 6 Teaching languages: English

### Teaching staff

Coordinator: Vives Costa, Jordi  
Others: Felipe Blanch, Jose Juan De

### Degree competences to which the subject contributes

#### Basic:

CB3. That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

#### Specific:

CE7. Knowledge of the basic principles of fluid mechanics and its application to problem solving in the field of engineering. Ability to design and interpret fluid dynamics systems.

#### Generic:

CG3. Knowledge in basic and technological subjects that will enable them to learn new methods and theories and give them the versatility to adapt to new situations.

CG4. Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and skills in the field of automotive engineering.

#### Transversal:

1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
2. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
3. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
4. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

### Learning objectives of the subject



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### Study load

Total learning time: 150h	Hours large group:	30h	20.00%
	Hours medium group:	0h	0.00%
	Hours small group:	30h	20.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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### Content

title english	Learning time: 30h Theory classes: 4h Laboratory classes: 8h Self study : 18h
Description: content english	
title english	Learning time: 45h Theory classes: 6h Laboratory classes: 12h Self study : 27h
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Description: content english	

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### Planning of activities

name english	Hours: 6h Laboratory classes: 2h Self study: 4h
name english	Hours: 18h Laboratory classes: 6h Self study: 12h
name english	Hours: 6h Laboratory classes: 2h Self study: 4h
name english	Hours: 6h Laboratory classes: 2h Self study: 4h
name english	Hours: 2h Laboratory classes: 2h

### Bibliography

#### Basic:

- Katz, Joseph. Race car aerodynamics: designing for speed. Revised 2nd ed. Cambridge: Bentley, 2006. ISBN 9780837601427.
- Sánchez Domínguez, Urbano. Máquinas hidráulicas. San Vicente (Alicante): Club Universitario, 2012. ISBN 9788415613008.
- Creus Solé, Antonio. Neumática e hidráulica. 2ª ed. Barcelona: Marcombo, 2011. ISBN 9788426716774.
- Anderson, John David. Fundamentals of aerodynamics. 6th ed. New York: McGraw-Hill Education, 2017. ISBN 9781259129919.

#### Complementary:

- Wendt, John F., ed. Computational fluid dynamics: an introduction [on line]. Berlin: Springer, 2009 [Consultation: 23/01/2019]. Available on: <<http://dx.doi.org/10.1007/978-3-540-85056-4>>. ISBN 9783540850557.
- Aragón González, Gerardo; Canales Palma, Aurelio; León Galicia, Alejandro. Introducción a la potencia fluida: neumática e hidráulica para ingenieros. Barcelona: Reverté, 2014. ISBN 9788429148039.

#### Others resources: