

220016 - Mechanics

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering	
Teaching unit:	712 - EM - Department of Mechanical Engineering	
Academic year:	2019	
Degree:	BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)	
ECTS credits:	4,5	Teaching languages: Catalan

Teaching staff

Coordinator: JORDI ROMEU GARBI

Others: JORDI PALMIOLA CREUS - TERESA PAMIES GOMEZ - ANDREU BALASTEGUI - BEATRIZ PURAS

Degree competences to which the subject contributes

Specific:

2. GrETA/GrEVA - Applied knowledge of materials science and technology; mechanics and thermodynamics; fluid mechanics; aerodynamics and flight mechanics; navigation systems and air traffic; aerospace technology; structural theory; economy and production; projects; environmental impact.

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.

Teaching methodology

The educational methodology is divided into four parts:

- Presencial sessions of contents exhibition
- Presencial sessions of practical work
- Autonomous work of study and realization of exercises and activities

In the content exhibition sessions the teaching staff will introduce the theory bases of the subject, methods, concepts and results with examples of engineer character to facilitate their understanding.

The teaching staff will guide students in the application of the theory concepts for solve problems related with industrial engineering in the sessions of practical work in the classroom. It will purpose exercises which students have to solve in the classroom with partners and the teacher, or out of the classroom, in order to learn the utilization of tools for solving problems.

The autonomous work will consist on problems and conceptual questions which are proposed in the bibliography. They will develop everything what has been seen in the presencial sessions of content exhibition and practical work.

Learning objectives of the subject

The subject introduces to student in applied knowledge of the mechanics and in the concepts and principles which determine the behaviour of the structures with dynamic solicitations on duty.

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Study load

Total learning time: 112h 30m	Hours large group:	31h	27.56%
	Hours medium group:	14h	12.44%
	Hours small group:	0h	0.00%
	Guided activities:	0h	0.00%
	Self study:	67h 30m	60.00%

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Content

(ENG) -1.1 Cinemàtica partícula	Learning time: 7h Theory classes: 2h Practical classes: 1h Self study : 4h
Description: 1.1 Particle kinematics	
(ENG) -1.2 Moviments del Sòlid Rígid	Learning time: 18h 30m Theory classes: 4h Practical classes: 2h Self study : 12h 30m
Description: e	
(ENG) -1.3 Sòlids en contacte	Learning time: 20h Theory classes: 6h Practical classes: 2h Self study : 12h
Description: e	
(ENG) -1.4 Cinemàtica plana	Learning time: 16h Theory classes: 4h Practical classes: 2h Self study : 10h
Description: e	

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(ENG) -1.5 Dinàmica de la partícula	Learning time: 5h Theory classes: 2h Practical classes: 1h Self study : 2h
Description: e Specific objectives: e	
(ENG) -1.6 Teoremes de la dinàmica	Learning time: 7h Theory classes: 2h Practical classes: 1h Self study : 4h
Description: e Specific objectives: e	
(ENG) -1.7 Inèrcia	Learning time: 5h Theory classes: 2h Practical classes: 1h Self study : 2h
Description: e Specific objectives: e	
(ENG) -1.8 Dinàmica del sòlid	Learning time: 18h Theory classes: 5h Practical classes: 2h Guided activities: 0h Self study : 11h
Description: e	

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(ENG) -1.9 Dinàmica plana	Learning time: 16h Theory classes: 4h Practical classes: 2h Self study : 10h
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Planning of activities

(ENG) LARGE GROUP SESSIONS	Hours: 42h Theory classes: 28h Self study: 14h
(ENG) MEDIUM GROUP SESSIONS	Hours: 21h Practical classes: 14h Self study: 7h
(ENG) EXAMEN PARCIAL	Hours: 24h 10m Theory classes: 1h Self study: 23h 10m
(ENG) FINAL EXAM	Hours: 25h 20m Theory classes: 2h Self study: 23h 20m

Qualification system

- Partial examination: 30%
- Final exam: 50%
- Ordinary activities of class (partial): 10%
- Ordinary activities of class (final): 10%

All those students who cannot attend the partial examination or who not pass it, will have the option to recover the note by taking the final exam of the subject. The passing of the final exam with a grade equal to or higher than 5 replaces the partial exam grade with a 5 point qualification.

Regulations for carrying out activities

The partial and final examination will be individual without material support (notes or books).
The ordinary activities will develop in groups with other classmates and teacher but without material support.

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Bibliography

Basic:

Capdevila Pagés, Ramón [et al.]. Cinemática. 2a ed. Barcelona: Edicions UPC, 2001. ISBN 8483014696.

Capdevila Pagés, Ramón [et al.]. Dinámica. Barcelona: Edicions UPC, 1993. ISBN 8476532830.

Capdevila Pagés, Ramón [et al.]. Mecánica: problemas [on line]. Barcelona: Edicions UPC, 2004 [Consultation: 07/07/2017]. Available on: <<http://hdl.handle.net/2099.3/36624>>. ISBN 8483017806.

Complementary:

Meriam, J. L.; Kraige, L.G. Mecánica para ingenieros. Vol. 2, Dinámica. 3a ed. Barcelona: Reverté, 1998-1999. ISBN 8429142592.

Others resources:

Audiovisual material

Apunts de Mecànica