

220004 - F1 - Physics I

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering		
Teaching unit:	748 - FIS - Department of Physics		
Academic year:	2019		
Degree:	BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)		
ECTS credits:	6	Teaching languages:	Catalan

Teaching staff

Coordinator: JOSEP LLUIS FONT GARCIA

Degree competences to which the subject contributes

Specific:

1. Understanding and mastery of basic concepts about the general laws of mechanics, thermodynamics and electromagnetism fields and waves and their application to solving problems in engineering.

Transversal:

2. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.

Teaching methodology

There will be theoretical lessons, developed in big group classes. The teacher will briefly introduce the general objectives of the chapter. After that, and with the aid of practical problems, the student will be led into active participation. The support material will be found in ATENEA: objectives, concepts, examples, evaluable activities and bibliography. There will also be problem lessons, with smaller groups and laboratory practices where the basic concepts of scientific methodology will be introduced including the concept of scientific approximation. The size of the laboratory groups will be small and there will be a part of the laboratory that is going to have to be done outside it, individually or in groups.

Learning objectives of the subject

- Give comprehension and control of basic concepts of physics, especially mechanics.
- Give comprehension and control of basic concepts of algebra and vector calculus.
- Give comprehension and control of basic concepts of particle and solid kinetics in plain movement.
- Give comprehension and control of basic concepts of particle and solid dynamic laws.
- Basic knowledge of fluid statics.

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Study load

Total learning time: 150h	Hours large group:	32h	21.33%
	Hours medium group:	14h	9.33%
	Hours small group:	14h	9.33%
	Self study:	90h	60.00%

Content

1. Vector and scalars	Learning time: 20h Theory classes: 3h Practical classes: 1h Laboratory classes: 4h Self study : 12h
2. Kinetics and dynamic of the particle and systems of particles.	Learning time: 75h Theory classes: 18h Practical classes: 8h Laboratory classes: 4h Self study : 45h
3. Solid kinetics and dynamic.	Learning time: 42h Theory classes: 9h Practical classes: 4h Laboratory classes: 4h Self study : 25h
4. Fluid statics.	Learning time: 13h Theory classes: 2h Practical classes: 1h Laboratory classes: 2h Self study : 8h

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Planning of activities

ACTIVITY 1: THEORY SESSIONS	Hours: 70h Theory classes: 28h Self study: 42h
ACTIVITY 2: CONTINUOUS EVALUATION	Hours: 8h Theory classes: 4h Self study: 4h
ACTIVITY 3: PRACTICAL SESSIONS	Hours: 44h Practical classes: 14h Self study: 30h
ACTIVITY 4: STATICS AND DYNAMICS LABORATORY	Hours: 24h Laboratory classes: 12h Self study: 12h
ACTIVITY 5: LABORATORY EXAM	Hours: 4h Laboratory classes: 2h Self study: 2h
ACTIVITY 6: MID TERM EXAMS	Hours: 3h Theory classes: 3h

Qualification system

Global mark = $0.35 \cdot N1A + 0.4 \cdot N2A + 0.10 \cdot NL + 0.15 \cdot NAC$

The subject will foresee ways to recover an unsatisfactory mark in the midterm exam

The acronyms represent:

NL: Laboratory grade.

N1A and N2A: First and second midterm exam.

NAC: Continuous evaluation mark

Regulations for carrying out activities

If a student doesn't develop any activity it will be graded with a 0.

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Bibliography

Basic:

Tipler, Paul Allen; Mosca, Gene. Física para la ciencia y la tecnología, vol. 1 [on line]. Barcelona: Reverté, 2010 [Consultation: 03/10/2018]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6536>. ISBN 9788429144321.

Riley, W.F.; Sturges, L.D. Ingeniería mecánica, vol. 2, Dinámica. Barcelona: Reverté, 1996. ISBN 8429142568.

Tipler, Paul Allen; Mosca, Gene. Física per a la ciència i la tecnologia, vol. 2 [on line]. Barcelona [etc.]: Reverté, 2010 [Consultation: 03/10/2018]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6537>. ISBN 9788429144338.

Complementary:

Ortega Girón, Manuel R. Lecciones de física, vol. 1, Mecánica-1 [on line]. 8a ed. Córdoba: Departamento de Física Aplicada, Universidad de Córdoba, 1995 [Consultation: 08/10/2019]. Available on: <<http://www.uco.es/users/fa1orgim/almacen/libros/LFMRP.pdf>>. ISBN 8440442904.

Serway, Raymond A. Física. 3a ed. Madrid: International Thomson, 2003. ISBN 8497321685.

Ohanian, H.C.; Markert, J.T. Física para ingeniería y ciencias. 3a ed. México: Mc Graw-Hill, 2009. ISBN 9789701067444.

Beer, Ferdinand Pierre [et al.]. Mecánica vectorial para ingenieros, vol. 1, estática [on line]. 10ª ed. México [etc.]: McGraw-Hill, cop. 2013 [Consultation: 04/10/2018]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=4260>. ISBN 9786071509253.

Others resources:

Hyperlink

<http://atenea.upc.edu/moodle/>
Campus Digital

<http://aransa.upc.es/>
Aransa

<http://www.ehu.es>
EHU