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300206 - MEC - Mechanics

Coordinating unit: 300 - EETAC - Castelldefels School of Telecommunications and Aerospace Engineering

Teaching unit: 748 - FIS - Department of Physics

Academic year: 2018

Degree: BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERINGS/BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING - NETWORK ENGINEERING (AGRUPACIÓ DE SIMULTANEÏTAT) (Syllabus 2015). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERING/BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERING/BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)

ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Definit a la infoweb de l'assignatura.

Others: Definit a la infoweb de l'assignatura.

Degree competences to which the subject contributes

Specific:

1. CE 2 AERO. Comprensión y dominio de los conceptos básicos sobre las leyes generales de la mecánica, termodinámica, campos y ondas y electromagnetismo y su aplicación para la resolución de problemas propios de la ingeniería. (CIN/308/2009, BOE 18.2.2009)

Transversal:

2. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
3. 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.

Teaching methodology

x

Learning objectives of the subject

x

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Study load

Total learning time: 150h	Hours large group:	42h	28.00%
	Hours medium group:	0h	0.00%
	Hours small group:	0h	0.00%
	Guided activities:	24h	16.00%
	Self study:	84h	56.00%

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Content

(ENG) Títol contingut 1: Introducció a l'assignatura

Learning time: 20h 30m

Theory classes: 5h 30m
Guided activities: 3h
Self study : 12h

Description:
X

Related activities:
X

(ENG) Títol contingut 2: Oscil·lacions

Learning time: 21h

Theory classes: 7h
Guided activities: 3h
Self study : 11h

Description:
X

Related activities:
X

(ENG) Títol contingut 3: Forces centrals

Learning time: 20h 30m

Theory classes: 5h 30m
Guided activities: 3h
Self study : 12h

Description:
X

Related activities:
X

(ENG) Títol contingut 4: Sistemes de Partícules

Learning time: 17h 30m

Theory classes: 5h
Guided activities: 1h 30m
Self study : 11h

Description:
X

Related activities:
X

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(ENG) Títol contingut 6: Sistema de coordenades mòbils	Learning time: 20h 30m Theory classes: 5h 30m Guided activities: 3h Self study : 12h

Description:
X

Related activities:
X

(ENG) Sòlid Rígid. Rotació entorn d'un eix fix i en torn a un eix variable.	Learning time: 30h Theory classes: 9h Guided activities: 3h Self study : 18h

Description:
X

Related activities:
X

(ENG) Títol contingut 7: Mecànica Racional	Learning time: 20h Theory classes: 4h 30m Guided activities: 7h 30m Self study : 8h

Description:
X

Related activities:
X

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Planning of activities

(ENG) TÍTOL ACTIVITAT 1: INTRODUCCIÓ A L'ASSIGNATURA	Hours: 1h 30m Guided activities: 1h 30m

(ENG) TÍTOL ACTIVITAT 2: FORCES DEPENENTS DE LA POSICIÓ, EL TEMPS I LA VELOCITAT	Hours: 1h 30m Guided activities: 1h 30m

(ENG) TÍTOL ACTIVITAT 3: OSCIL·LACIONS I	Hours: 1h 30m Guided activities: 1h 30m

OSCIL.LACIONS II	Hours: 1h 30m Theory classes: 1h 30m
Description: x	

(ENG) TÍTOL ACTIVITAT 5: CONTROL DE PROBLEMES I	Hours: 1h 30m Theory classes: 1h 30m
Description: X	

(ENG) TÍTOL ACTIVITAT 6: FORCES CONSERVATIVES I CENTRALS. MOMENT ANGULAR	Hours: 1h 30m Guided activities: 1h 30m

(ENG) TÍTOL ACTIVITAT 7: FORCES QUE DEPENEN DE R AL QUADRAT. ORBITES I LLEIS DE KEPLER	Hours: 1h 30m Self study: 1h 30m

(ENG) TÍTOL ACTIVITAT 8: SISTEMES DE PARTÍCULES	Hours: 1h 30m Guided activities: 1h 30m

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(ENG) TÍTOL ACTIVITAT 9: SISTEMA DE COORDENADES MÒBILS I	Hours: 1h 30m Self study: 1h 30m

SISTEMES DE COORDENADES MÒBILS II	Hours: 1h 30m Theory classes: 1h 30m

Description:
X

Support materials:
X

(ENG) TÍTOL ACTIVITAT 11: ROTACIÓ ENTORN D'UN EIX D'UN SÒLID RÍGID	Hours: 1h 30m Self study: 1h 30m

(ENG) TÍTOL ACTIVITAT 12: TENSOR D'INÈRCIA I MOVIMENT D'UN COS RÍGID EN L'ESPAI	Hours: 1h 30m Self study: 1h 30m

(ENG) TÍTOL ACTIVITAT 13: CONTROL DE PROBLEMES II	Hours: 1h 30m Theory classes: 1h 30m

CONTROL DE PROBLEMES III	Hours: 1h 30m Theory classes: 1h 30m

Description:
X

Support materials:
X

Descriptions of the assignments due and their relation to the assessment:
X

Specific objectives:
X

(ENG) INTRODUCCIÓ A LA MECÀNICA DE LAGRANGE	Hours: 1h 30m Guided activities: 1h 30m

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(ENG) TÍTOL ACTIVITAT 16: PROJECTE DE L'ASSIGNATURA	Hours: 10h Guided activities: 10h

Description:
X

Support materials:
X

Specific objectives:
X

Qualification system

x

Regulations for carrying out activities

x

Bibliography

Basic:

Riley, William F.; Sturges, Leroy D. Ingeniería mecánica. Vol. 1, Estática. Barcelona [etc.]: Reverté, 1995-1996. ISBN 842914255X.

Meriam, J. L.; Kraige, L.G. Mecánica para ingenieros. 3a ed. Barcelona [etc.]: Reverté, 1998-1999. ISBN 8429142800.

Riley, William F.; Sturges, Leroy D. Ingeniería mecánica. Vol. 2, Dinámica. Barcelona [etc.]: Reverté, 1995-1996. ISBN 8429142568.

Symon, Keith R. Mechanics. 3rd ed. Reading, Massachusets [etc.]: Addison-Wesley, 1971. ISBN 0201073927.

Morin, David. Introduction to classical mechanics : with problems and solutions. Cambridge: Cambridge University Press, 2008. ISBN 9780521876223.

Complementary:

Goldstein, Herbert; Safko, John; Poole, Charles P. Classical mechanics. 3a ed. San Francisco: Addison-Wesley, 2002. ISBN 0201657023.

Taylor, John R. Classical mechanics. Sausalito, California: University Science Books, 2005. ISBN 189138922X.

French, A. P. Mecànica newtoniana. Barcelona [etc.]: Reverté, 1974. ISBN 8429140999.

Marion, Jerry B. Dinámica clásica de las partículas y sistemas. Barcelona: Reverté, 1975. ISBN 8429140948.

Lunn, Mary. A First course in mechanics. Oxford [etc.]: Oxford University Press, 1991. ISBN 0198534302.

Others resources:

General course on physics with Java applets: http://www.sc.ehu.es/sbweb/fisica/