

Course guides

330063 - SM - Mechanical Systems

Last modified: 20/07/2020

Unit in charge: Manresa School of Engineering
Teaching unit: 712 - EM - Department of Mechanical Engineering.

Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN ICT SYSTEMS ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2016). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2016). (Compulsory subject).
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2016). (Compulsory subject).

Academic year: 2020 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: ANAS AL OMAR MESNAOUI

Others: JOSE IGNACIO ALCELAY LARRION - FERRAN MARTINEZ CANO - JOSE ORTUÑO MARTIN - ESTEBAN PEÑA PITARCH

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. (ENG) Capacidad para conocer, entender y utilizar los principios fundamentales que rigen el equilibrio mecánico de los cuerpos rígidos, así como los distintos métodos de cálculo. Comprender la problemática del análisis y diseño de sistemas mecánicos.

Transversal:

2. 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.
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.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	10.00
Hours large group	45,0	30.00
Self study	90,0	60.00

Total learning time: 150 h



CONTENTS

(ENG) 1. Sistemas de Fuerzas

Full-or-part-time: 25h

Theory classes: 8h

Laboratory classes: 2h

Self study : 15h

(ENG) 2. Equilibrio de Cuerpos Rígidos

Full-or-part-time: 23h

Theory classes: 7h

Laboratory classes: 2h

Self study : 14h

(ENG) 3. Rozamiento

Full-or-part-time: 15h

Theory classes: 4h

Laboratory classes: 2h

Self study : 9h

(ENG) 4. Cinemática del Cuerpo Rígido

Full-or-part-time: 30h

Theory classes: 9h

Laboratory classes: 3h

Self study : 18h

(ENG) 5. Dinámica del Cuerpo Rígido

Full-or-part-time: 30h

Theory classes: 9h

Laboratory classes: 3h

Self study : 18h

(ENG) 6. Mecanismos como Sistemas de Cuerpos Rígidos

Full-or-part-time: 27h

Theory classes: 8h

Laboratory classes: 3h

Self study : 16h

ACTIVITIES

(ENG) 1. SISTEMAS DE FUERZAS

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

(ENG) 2. EQUILIBRIO DE CUERPOS RÍGIDOS

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

(ENG) 3. ROZAMIENTO

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

(ENG) 4. PRÁCTICA DE LABORATORIO

Full-or-part-time: 8h
Laboratory classes: 3h
Self study: 5h

(ENG) 5. PRÁCTICA DE LABORATORIO

Full-or-part-time: 8h
Laboratory classes: 3h
Self study: 5h

(ENG) 6. PRÁCTICA DE LABORATORIO

Full-or-part-time: 8h
Laboratory classes: 3h
Self study: 5h

(ENG) 7. PRIMERA PRUEBA INDIVIDUAL DE EVALUACIÓN CONTINUA

Full-or-part-time: 12h
Theory classes: 2h
Self study: 10h



(ENG) 8. SEGUNDA PRUEBA INDIVIDUAL DE EVALUACIÓN CONTINUA

Full-or-part-time: 12h
Theory classes: 2h
Self study: 10h

(ENG) 9. PRUEBA FINAL

Full-or-part-time: 18h
Theory classes: 3h
Self study: 15h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Meriam, J. L.; Kraige, L. G. Mecánica para ingenieros. Vol. 1, Estática. 3ª ed. Barcelona: Reverté, 1998. ISBN 8429142800.
- Meriam, J. L.; Kraige, L. G. Mecánica para ingenieros. Vol. 2, Dinámica. 3ª ed. Barcelona: Reverté, 1998. ISBN 8429142800.
- Norton, Robert L. Diseño de maquinaria: síntesis y análisis de máquinas y mecanismos [on line]. 4ª ed. México: McGraw-Hill, 2008 [Consultation : 29/07/2020]. Available on : http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=5701. ISBN 9789701068847.
- Uicker, John Joseph; Pennock, Gordon R; Shigley, Joseph E. Theory of machines and mechanisms. International 4th ed. New York: Oxford University Press, 2011. ISBN 9780199777815.
- Beer, Ferdinand P., i altres. Mecánica vectorial para ingenieros. Vol. 1, Estática [on line]. 11ª ed. México: McGraw-Hill Education, 2017 [Consultation: 18/06/2019]. Available on: https://discovery.upc.edu/iii/encore/record/C__Rb1516244?lang=cat. ISBN 9781456255275.
- Beer, Ferdinand P., i altres. Mecánica vectorial para ingenieros. Vol. 2, Dinámica [on line]. 11ª ed. México: McGraw-Hill Education, 2017 [Consultation: 18/06/2019]. Available on: https://discovery.upc.edu/iii/encore/record/C__Rb1516244?lang=cat. ISBN 9781456255268.

Complementary:

- Hibbeler, R. C; Murrieta Murrieta, Jesús Elmer; Fonseca Campos, Jorge. Ingeniería mecánica : dinámica. 14a ed. Ciutat de Mèxic: Pearson, 2016. ISBN 9786073236973.
- Hibbeler, R. C; Murrieta Murrieta, Jesús Elmer. Ingeniería mecánica : estática. 14a ed. Ciutat de Mèxic: Pearson, 2016. ISBN 9786073237079.
- Bedford, A.; Fowler, W. T. Mecánica para ingeniería. Vol.1, Estática. 5ª ed. México: Pearson Educación, 2008. ISBN 9789702612155.
- Bedford, A.; Fowler, W. T. Mecánica para ingeniería. Vol. 2, Dinámica. 5ª ed. México: Pearson Educación, 2008. ISBN 9789702612155.
- Riley, William F.; Sturges, Leroy D. Ingeniería mecánica. Vol. 1, Estática. Barcelona: Reverté, 1995. ISBN 842914255X.
- Riley, William F.; Sturges, Leroy D. Ingeniería mecánica. Vol. 2, Dinámica. Barcelona: Reverté, 1995. ISBN 8429142568.