

340055 - DIMA-M6O12 - Machine Design

Coordinating unit: 340 - EPSEVG - Vilanova i la Geltrú School of Engineering
Teaching unit: 712 - EM - Department of Mechanical Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 6 Teaching languages: Catalan

Teaching staff

Coordinator: JOAN SOLE ROVIRA

Others: JOAN SOLE ROVIRA

Degree competences to which the subject contributes

Specific:

1. CE20. Knowledge and ability of calculation, design and machine testing.

Transversal:

2. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

Teaching methodology

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Learning objectives of the subject

When finishing the subject the student has to be able to:

- Design typical elements of machines.
- Work in teams effectively, improving communication, distribution of tasks and group cohesion.
- Exhibits effective technical results.

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Study load

Total learning time: 150h	Hours large group:	52h 30m	35.00%
	Hours medium group:	0h	0.00%
	Hours small group:	7h 30m	5.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

1. Three-dimensional state of tensions.	Learning time: 8h Theory classes: 8h
Description: .	
2. Failure theories.	Learning time: 6h Theory classes: 6h
Description: .	
3. Fatigue.	Learning time: 8h Theory classes: 8h
Description: .	
4. Shafts.	Learning time: 4h Theory classes: 4h
Description: .	
5. Rolling bearings.	Learning time: 4h Theory classes: 4h
Description: .	
6. Gears.	Learning time: 8h Theory classes: 8h
Description: .	

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7.	Learning time: 4h Theory classes: 4h
Description: .	
8. Threaded fasteners and power screws.	Learning time: 8h Theory classes: 8h
Description: .	

Qualification system

The training activities of knowledge acquisition and related to the control of the learning process of the student will be evaluated with the support of the platform SoRAP and will assume 7% of the final grade of the subject. The assessment evaluation activities will be solved in two evaluation acts that will be planned by the School within the periods of partial evaluation and final evaluation, respectively. These accrediting evaluation activities will take the form of written exercises, their results will correspond to 93% of the final grade of the subject and will be reevaluable (during the reevaluation period) according to what is specified in the academic regulations of the Degree studies.

Bibliography

Basic:

Beer, Ferdinand Pierre ; Dorador, Jesús Manuel. Mecánica de materiales. 5a ed. México [etc.]: McGraw-Hill, 2010. ISBN 9786071502636.

Norton, Robert L. Diseño de maquinaria : síntesis y análisis de máquinas y mecanismos. 5a ed. México [etc.]: McGraw-Hill, 2013. ISBN 9786071509352.

Juvinall, Robert C. Diseño de elementos de máquinas. 2a ed. México, D.F.: Limusa, 2013. ISBN 9786070504365.

Avilés González, Rafael. Métodos de cálculo de fatiga para ingeniería. 2a ed. Madrid: Paraninfo, 2015. ISBN 9788428335188.

Bigordà Peiró, Jacint ; Fenollosa i Coral, Josep. La Fatiga dels elements mecànics [on line]. Barcelona: Edicions UPC, 1993 [Consultation: 17/03/2015]. Available on: <<http://hdl.handle.net/2099.3/36329>>. ISBN 8483010526, 8476533683.

Fenollosa i Coral, Josep. Unions cargolades [on line]. Barcelona: Edicions UPC, 1993 [Consultation: 17/03/2015]. Available on: <<http://hdl.handle.net/2099.3/36330>>. ISBN 8476532636.