

330415 - EMA - Materials Engineering

Coordinating unit: 330 - EPSEM - Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN MINING ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Riera Colom, Maria Dolores
Others: Soler Conde, Marc Antoni

Degree competences to which the subject contributes

Specific:

1. (ENG) Coneixement del comportament mecànic en servei dels materials.
2. (ENG) Conèixer els processos bàsics de conformat dels diferents tipus de materials d'enginyeria.
3. (ENG) Seleccionar el material més adient per a aplicacions bàsicament estructurals.

Transversal:

4. 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.
5. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
6. 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.
7. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 2. Applying sustainability criteria and professional codes of conduct in the design and assessment of technological solutions.

Learning objectives of the subject

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Study load

Total learning time: 150h	Hours large group:	0h	0.00%
	Hours medium group:	60h	40.00%
	Hours small group:	0h	0.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

title english	Learning time: 2h Theory classes: 2h
Description: content english	
title english	Learning time: 3h Theory classes: 3h
Description: content english	
title english	Learning time: 8h Theory classes: 4h Laboratory classes: 1h Self study : 3h
Description: content english	
title english	Learning time: 2h Theory classes: 2h
Description: content english	
title english	Learning time: 14h Theory classes: 4h Laboratory classes: 4h Self study : 6h
Description: content english	

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title english	Learning time: 17h Theory classes: 8h Laboratory classes: 4h Self study : 5h
Description: content english	
title english	Learning time: 4h Theory classes: 4h
Description: content english	
title english	Learning time: 36h Theory classes: 6h Laboratory classes: 6h Self study : 24h
Description: content english	
title english	Learning time: 2h Theory classes: 2h
Description: content english	
title english	Learning time: 15h Theory classes: 3h Self study : 12h
Description: content english	



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title english	Learning time: 3h Theory classes: 3h
Description: content english	

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Planning of activities

name english	Hours: 1h Laboratory classes: 1h
name english	Hours: 3h Self study: 3h
name english	Hours: 4h Laboratory classes: 4h
name english	Hours: 6h Self study: 6h
name english	Hours: 4h Laboratory classes: 4h
name english	Hours: 5h Self study: 5h
name english	Hours: 6h Laboratory classes: 6h
name english	Hours: 6h Self study: 6h
name english	Hours: 22h Theory classes: 2h Self study: 20h
name english	Hours: 18h Self study: 18h

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name english	Hours: 12h Self study: 12h
name english	Hours: 22h Theory classes: 2h Self study: 20h

Bibliography

Basic:

Ashby, M. F.; Jones, David R. H. *Materiales para ingeniería. Vol. 1, Introducción a las propiedades, las aplicaciones y el diseño.* Barcelona: Reverté, 2008-2009. ISBN 9788429172553.

Ashby, M. F.; Jones, David R. H. *Materiales para ingeniería. Vol. 2, Introducción a la microestructura, el procesamiento y el diseño.* Barcelona: Reverté, 2008-2009. ISBN 9788429172560.

Complementary:

Dieter, George Ellwood; Bacon, David. *Mechanical metallurgy.* SI Metric ed. London: McGraw-Hill Book Company, 1988. ISBN 0071004068.

Anglada, M. J., ed. *Fractura de materiales [on line].* Barcelona: Edicions UPC, 2002 [Consultation: 02/12/2016]. Available on: <<http://hdl.handle.net/2099.3/36175>>. ISBN 8483015927.

Hosford, William F.; Caddell, Robert M. *Metal forming: mechanics and metallurgy.* 4th ed. Cambridge: Cambridge University, 2011. ISBN 9781107004528.

Brydson, J. A. *Plastics materials.* 7th ed. Oxford: Butterworth-Heinemann, 1999. ISBN 0750641326.

Black, J. T.; Kohser, R. A. *DeGarmo's materials and processes in manufacturing.* 11th ed. Hoboken: Wiley, 2013. ISBN 9780470873755.

Miracle, D. B.; Donaldson, S. L., eds. *ASM Handbook. Vol. 21, Composites.* Ohio: ASM International, 2001. ISBN 9780871707031.

ASM International Handbook Committee, dir. *Ceramics and glasses.* Metal Park, Ohio: ASM International. The Materials Information Society, 1991. ISBN 0871702827.

Kobayashi, Shiro; Oh, Soo-Ik; Altan, Taylan. *Metal forming and the finite-element method.* New York: Oxford University Press, 1989. ISBN 9780195044027.

Shackelford, James F.; Güemes, Alfredo; Martín, Núria. *Introducción a la ciencia de materiales para ingenieros.* 7ª ed. Madrid: Pearson Educación, 2010. ISBN 9788483226599.

Others resources: