

320165 - POLENG - Polymers in Engineering

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering		
Teaching unit:	713 - EQ - Department of Chemical Engineering		
Academic year:	2019		
Degree:	BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional) BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional) BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Optional) BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional) BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Teaching unit Optional)		
ECTS credits:	6	Teaching languages:	Catalan

Teaching staff

Coordinator:	Xavier Cañavate
Others:	Xavier Cañavate, Xavier Colom

Degree competences to which the subject contributes

Specific:

1. IND_COMMON: Knowledge of the science principles, technology and materials . Understanding the relation between the microstructure, synthesis or processing and properties of these materials.

Transversal:

2. 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.

Learning objectives of the subject

Study load

Total learning time: 150h	Hours large group:	60h	40.00%
	Self study:	90h	60.00%

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Content

(ENG) Tema 1: Introducció als polímers	Learning time: 7h 30m Theory classes: 3h Self study : 4h 30m
(ENG) Tema 2: Síntesi de polímers	Learning time: 2h 30m Theory classes: 1h Self study : 1h 30m
(ENG) Tema 3: Microestructura morfologia i propietats	Learning time: 7h 30m Theory classes: 3h Self study : 4h 30m
(ENG) Tema 4: Propietats mecàniques	Learning time: 15h Theory classes: 6h Self study : 9h
(ENG) Tema 5: Propietats funcionals	Learning time: 10h Theory classes: 4h Self study : 6h
(ENG) Tema 6: Introducció als principals processos de transformació de polímers	Learning time: 2h 30m Theory classes: 1h Self study : 1h 30m
(ENG) Tema 7: Barreges de polímers	Learning time: 15h Theory classes: 6h Self study : 9h

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(ENG) Tema 8: Biopolímers i fibres	Learning time: 15h Theory classes: 6h Self study : 9h
(ENG) Tema 9: Caracterització de polímers	Learning time: 25h Theory classes: 10h Self study : 15h
(ENG) Tema 10: Materials Compòsits	Learning time: 25h Theory classes: 10h Self study : 15h
(ENG) Tema 11: Introducció als criteris de selecció de materials polimèrics	Learning time: 25h Theory classes: 10h Self study : 15h

Planning of activities

(ENG) CLASSES DE TEORIA	Hours: 60h Theory classes: 60h
(ENG) 1ER EXAMEN	Hours: 3h Theory classes: 3h
(ENG) 2ON EXAMEN	Hours: 3h Theory classes: 3h
(ENG) ACTIVITAT AVALUACIÓ ESPECÍFICA	Hours: 1h Theory classes: 1h

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Qualification system

- 2 exams: 35% cada un
- 2 evaluation specific activities: 15,15%

All those students who fail, want to improve their mark or cannot attend the partial exam, they will have the opportunity to be examined the same day of the final exam. If due to the circumstances it is not viable to do it the same day of the final exam, the teacher responsible for the subject will propose, via the platform Atenea, that the mentioned recovery exam will be carried out another day, in class schedule.

The new mark of the recovery exam will substitute the previous one, unless it is lower.

Bibliography

Basic:

- Painter, P.C.; Coleman, M.M. Fundamentals of polymer science: an introductory text. 2nd ed. Lancaster [etc.]: Technomic, cop. 1997. ISBN 1566765595.
- Michaeli, W. Plastics processing: an introduction. Munich: Cincinnati: Hanser; Hanser Gardner, cop. 1995. ISBN 3446175725.
- Brydson, J. A. Plastics materials. 7th ed. Oxford: Butterworth-Heinemann, 1999. ISBN 0750641320.
- Painter, P.C.; Coleman, M.M. Essentials of polymer science and engineering. Lancaster: DEStech Publications, 2009. ISBN 9781932078756.

Complementary:

- Gruenwald, Geza. Plastics: how structure determines properties. Munich [etc.]: Hanser, cop. 1993. ISBN 3446165207.
- Young, R.J.; Lovell, P.A. Introduction to polymers. 3rd ed. Boca Raton [etc.]: CRC Press, cop. 2011. ISBN 9780849339295.
- McCrum, N.G; Buckley, C.P; Bucknall, C.B. Principles of polymer engineering. 2nd ed. Oxford, [etc.]: Oxford University Press, 1997. ISBN 0198565267.
- Osswald, T.A.; Menges, G. Materials science of polymers for engineers. 2nd ed. Munich [etc.]: Cincinnati: Hanser; Hanser/Gardner Publications, cop. 2003. ISBN 1569903484.
- Ashby, M. F. Materials selection in mechanical design [on line]. 4th ed. Burlington (Massachusetts): Butterworth-Heinemann, cop. 2011 [Consultation: 27/05/2014]. Available on: <<http://www.sciencedirect.com/science/book/9781856176637>>. ISBN 9781856176637.
- Hull, Derek. Materiales compuestos. Barcelona [etc.]: Reverté, cop. 1987. ISBN 8429148396.
- Michaeli, W. [et al.]. Tecnología de los composites/plásticos reforzados. Barcelona: Hanser, DL 1992. ISBN 8487454046.
- Miravete, A.; Larrodé, E. Materiales compuestos. Zaragoza: A. Miravete, 2000. ISBN 9788492134977.