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205402 - Functional Innovations in Textile Finishes

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 702 - CMEM - Department of Materials Science and Metallurgy
Academic year: 2019
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 5 Teaching languages: Spanish

Teaching staff

Coordinator: Ardanuy Raso, Monica

Others: González López, Laura

Prior skills

The usual graduates in engineering

Teaching methodology

Theoretical classes
Analysis of Case Studies
Laboratory classes

Learning objectives of the subject

. In the current environment, innovation has become a competitive priority of the highest order. The company has identified new products, processes and services, and being able to implement them.
· The objective of the course is to provide the tools to develop innovative projects, managing innovation in all areas of the textile company to achieve competitive leadership
· Develop the ability of students to identify areas of process innovation and textiles, structure them and present them to engineering projects
· Boosting the knowledge of chemical finishing of fabrics, primarily from the points of view of the finished fabric quality aspects and ecological implications of products and processes. Study of biotechnological processes textiles
· Develop specific skills associated with academic and transverse

Study load

Total learning time: 125h	Hours large group:	30h	24.00%
	Hours medium group:	0h	0.00%
	Hours small group:	15h	12.00%
	Guided activities:	0h	0.00%
	Self study:	80h	64.00%

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Content

Unit 1: Introduction

Learning time: 9h
Theory classes: 9h

Description:
General introduction to Innovations in textile finishing

Unit 2: Sol-gel finishing

Learning time: 29h
Theory classes: 9h
Self study : 20h

Description:
2.1. Concept of Sol-gel
2.2. Examples of applications of sol-gel finishing to textiles

Related activities:
Laboratory work I

Unit 3: Micro-nanoencapsulation finishing

Learning time: 29h
Theory classes: 9h
Self study : 20h

Description:
3.1. Concept of Micro-nanoencapsulation
3.2. Examples of applications of Micro-nanoencapsulation finishing to textiles

Related activities:
Laboratory work II

Unit 4: Plasma treatments

Learning time: 29h
Theory classes: 9h
Self study : 20h

Description:
4.1. Concept of plasma treatments
4.2. Examples of applications of plasma treatment on textiles finishing

Related activities:
Laboratory work III

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Unit 5: Multifunctional and smart finishing	Learning time: 29h Theory classes: 9h Self study : 20h

Description:
5.1. Examples of applications of multifunctional finishing of textiles
5.2. Examples of applications of smart finishing of textiles

Related activities:
Laboratory work IV

Qualification system

Exam 1: 20%
Exam 2: 20%
Exercises and practical cases: 30%
Laboratory reports: 30%.
For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept.
If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be 5.0.

Regulations for carrying out activities

Will promote teamwork and individual tutorials to achieve the objectives

Bibliography

Basic:

Schindler, W. D.; Hauser, P. J. Chemical finishing of textiles. Cambridge: Woodhead, 2004. ISBN 1855739054.

Heywood, Derek. Textile finishing. Bradford: Society of Dyers and Colourists, 2003. ISBN 0901956813.

Carr, C. M. Chemistry of the textiles industry. London [etc.]: Blackie Academic & Professional, cop. 1995. ISBN 0751400548.

Behery, Hassan M. Effect of mechanical and physical properties on fabric hand. Boca Raton, (etc.): Cambridge: CRC Press; Woodhead Publishing Limited, 2005. ISBN 1855739186.

Complementary:

Cegarra Sánchez, José. Fundamentos y tecnología del blanqueo de materias textiles. Barcelona: Universitat Politècnica de Catalunya, 1997. ISBN 8460565262.

Shishoo, R. [et al.]. Plasma technologies for textiles. Boca Raton [etc.]: Woodhead/CRC, 2007. ISBN 9781420044508.

Others resources: