

220233 - Simulation and Physicochemical Technology for the Manufacturing of Biomaterials, Pulp and Paper Products

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering

Teaching unit: 714 - ETP - Department of Textile and Paper Engineering

Academic year: 2019

Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)

ECTS credits: 5 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: MARIA BLANCA RONCERO VIVERO

Others: SILVIA GALEA MARTINEZ

Degree competences to which the subject contributes

Specific:

1. Ability to analyze, implement and project the main unitary operations and systems which compose manufacturing processes of fibrous materials (biomaterials, core and paper).
2. Ability to analyze and evaluate the physical, mechanical and optical properties about specific fibrous materials (biomaterials, core and paper).
3. Ability to develop new types of paper or paper products according to their specifications and specific technical applications.
4. Ability to select and evaluate various sources of vegetable fibers suitable for the manufacture of fibrous materials (biomaterials, pulp and paper) with certain technical characteristics.

Learning objectives of the subject

Study load

Total learning time: 125h	Hours large group:	30h	24.00%
	Hours small group:	15h	12.00%
	Self study:	80h	64.00%

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Content

(ENG) Mòdul 1: Introducció a la simulació	Learning time: 4h Theory classes: 1h Self study : 3h
(ENG) Mòdul 2: Simulador de processos paperers CADSIM	Learning time: 12h Theory classes: 4h Self study : 8h
(ENG) Mòdul 3: Mòduls de simulació de CADSIM	Learning time: 38h Theory classes: 10h Laboratory classes: 4h Self study : 24h
(ENG) Mòdul 4: Intercanvi de dades	Learning time: 29h Theory classes: 8h Laboratory classes: 3h Self study : 18h
(ENG) Mòdul 5: Additius Funcionals-I	Learning time: 12h Theory classes: 2h Laboratory classes: 2h Self study : 8h
(ENG) Mòdul 6: Additius Funcionals-II	Learning time: 14h Theory classes: 3h Laboratory classes: 2h Self study : 9h

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(ENG) Mòdul 7: Additius de control	Learning time: 16h Theory classes: 2h Laboratory classes: 4h Self study : 10h
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Qualification system

Each student's overall mark will be the sum of the individual marks obtained in the following assessment events:

- Activity 1 (Evaluation of knowledge acquisition through written exam: Midterm exam): 35%.
- Activity 2 (Evaluation of laboratory activities from written reports and oral presentations): Evaluation of laboratory activities: 30%
- Activity 3 (Evaluation of knowledge acquisition through written exam: Final exam): 35%.

The unsatisfactory result in the midterm exam (Activity 1) may be redirected by a written test on the day set for the final exam (Activity 3). Students who didn't assist at the midterm exam (Activity 1) or with a grade lower than 5.0 in the midterm exam (Activity 1) can access this test. The grade obtained in the redirected test will replace the initial grade as long as it is higher.

- EV4 (Evaluation of practical case solving and assignments from written reports and oral presentations): 20%

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 pass 5.0.

Regulations for carrying out activities

Written practical reports are to be prepared individually by each student. Passing the subject requires completing the practical activities and delivering the corresponding reports.

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Bibliography

Basic:

Aurel Systems Inc. CADSIM Plus: the dynamic electronic flowsheet processor simulator.

Ek, M.; Gellerstedt, G.; Henriksson, G. Pulp and paper chemistry and technology, vol. 3, Paper chemistry and technology. Berlin: De Gruyter, 2009. ISBN 9783110213430.

Cátedra de Tecnología Papelera, CIPAGRAF. Los productos químicos auxiliares en la industria papelera. Terrassa: ETSiIT, 1984.

Cátedra de Tecnología Papelera, CIPAGRAF. El encolado del papel. Terrassa: ETSiIT, 1985. ISBN 846003903X.

Complementary:

Smook, Gary A. Handbook for pulp & paper technologists. 3rd ed. Vancouver [etc.]: Angus Wilde, cop. 2002. ISBN 0969462859.

Thorp, Benjamin A. (ed.). Pulp and paper manufacture, vol. 7, Paper machine operations. 3rd ed. Montreal: Joint Textbook Committee of the Paper Industry of the United States and Canada, 1993. ISBN 091989304X.

Kouris, Michael (ed.). Pulp and paper manufacture, vol. 8, Coating, converting and specialty processes. 3rd ed. Montreal: Joint Textbook Committee of the Paper Industry of the United States and Canada, 1993. ISBN 091989304X.