

330070 - SQ - Chemical Systems

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 ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits:	6
Teaching languages:	Catalan

Teaching staff

Coordinator: ANTONIO DAVID DORADO CASTAÑO

Others: Gorchs Altarriba, Roser
Torra Bitlloch, Immaculada
Guimerà Villalva, Xavier
Prades Martell, Lledó

Degree competences to which the subject contributes

Specific:

1. (ENG) Utilitzar el material bàsic de laboratori químic. Adquirir els coneixements bàsics de balanços de matèria i energia. Identificar les operacions presents en una planta química, juntament amb els serveis auxiliars (aigua i energia). Comprovar in-situ el funcionament d'una indústria química (procés, control de qualitat, seguretat). Conèixer els productes químics perillosos: normatives, ús, manipulació.

Transversal:

2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
3. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
4. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

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Learning objectives of the subject

Study load

Total learning time: 150h	Hours large group:	30h	20.00%
	Hours medium group:	0h	0.00%
	Hours small group:	30h	20.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

Content

(ENG) 1. Fonaments d'Enginyeria Química	Learning time: 56h Theory classes: 16h Laboratory classes: 16h Self study : 24h
Description: .	
(ENG) 2. La Indústria Química	Learning time: 94h Theory classes: 14h Laboratory classes: 14h Self study : 66h
Description: .	

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Planning of activities

.	Hours: 14h Laboratory classes: 14h
(ENG) 2. LA INDUSTRIA QUÍMICA I: ACTIVITATS 4 I 5 (CONTINGUT 2).	Hours: 12h Laboratory classes: 12h
.	Hours: 4h Theory classes: 4h

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Bibliography

Basic:

- Aucejo, Antoni. *Introducció a l'enginyeria química*. València: Universitat de València, 2013. ISBN 9788437091624.
- Burton, George, i altres. *Salter's advanced chemistry*. Vol. 1, *Chemical storylines*. 2nd ed. Oxford: Heinemann, 2000. ISBN 0435631195.
- Felder, Richard M.; Rousseau, Ronald W. *Principios elementales de los procesos químicos*. 3ª ed. México: Limusa Wiley, 2003. ISBN 9681861698.
- Himmelblau, David Mautner. *Principios básicos y cálculos en ingeniería química*. 6ª ed. México: Prentice-Hall Hispanoamericana, 1997. ISBN 9688808024.
- Hougen, Olaf A.; Watson, Kenneth M.; Ragatz, R. A. *Principios de los procesos químicos*. Barcelona: Reverté, 1982. ISBN 8429140506.
- Vian Ortuño, Ángel. *Introducción a la química industrial*. 2ª ed. Barcelona: Reverté, 1994. ISBN 842917933X.
- Peiró Pérez, Juan J. *Balances de materia: problemas resueltos y comentados*. Valencia: Universidad Politécnica de Valencia, 1997. ISBN 8477215251.
- Henley, Ernest J.; Rosen, Edward M. *Cálculo de balances de materia y energía: métodos manuales y empleo de máquinas calculadoras*. Barcelona: Reverté, 1973. ISBN 8429172289.
- Coulson, J. M.; Richardson, J. F. *Ingeniería química*. Barcelona: Reverté, 1979-1984. ISBN 8429171347.
- McCabe, Warren L.; Smith, Julian C.; Harriott, P. *Unit operations of chemical engineering*. 7th ed. Boston: McGraw-Hill, 2005. ISBN 0071247106.
- Barton, John; Rogers, Richard, eds. *Chemical reaction hazards: a guide to safety*. 2th ed. Rugby: Institution of Chemical Engineers, 1997. ISBN 0852953410.
- Santamaría, J. M.; Braña, P. A. *Análisis y reducción de riesgo en la industria química*. Madrid: Mapfre, 1994. ISBN 8471009692.
- Casal Fàbrega, Joaquim, i altres. *Anàlisi del risc en instal·lacions industrials* [on line]. Barcelona: Edicions UPC, 1996 [Consultation: 11/07/2017]. Available on: <<http://hdl.handle.net/2099.3/36154>>. ISBN 848963607.
- McCabe Warren, L.; Smith, Julian C.; Harriott, Peter. *Operaciones unitarias en ingeniería química*. 7ª ed. Madrid: McGraw-Hill, 2007. ISBN 9701061748.

Complementary:

- Costa Novella, E. *Ingeniería química*. Madrid: Alhambra, 1983. ISBN 8420509892.
- Perry, Robert H., dir. *Manual del ingeniero químico* [on line]. 4ª ed. Madrid: McGraw-Hill, 2001 [Consultation: 18/06/2019]. Available on: <https://discovery.upc.edu/iii/encore/record/C__Rb1510158?lang=cat>. ISBN 8448130081.
- Sinnott, R. K. *Coulson & Richardson's chemical engineering*. Vol. 6, *Chemical engineering design*. 4th ed. Oxford: Elsevier Butterworth-Heinemann, 2005. ISBN 0750665386.

Others resources: