

Course guide

330070 - SQ - Chemical Systems

Last modified: 28/04/2025

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.

Degree: BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: 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.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT



STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Self study	90,0	60.00
Hours small group	30,0	20.00

Total learning time: 150 h

CONTENTS

(ENG) 1. Fonaments d'Enginyeria Química

Description:

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Full-or-part-time: 56h

Theory classes: 16h

Laboratory classes: 16h

Self study : 24h

(ENG) 2. La Indústria Química

Description:

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Full-or-part-time: 94h

Theory classes: 14h

Laboratory classes: 14h

Self study : 66h

ACTIVITIES

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Full-or-part-time: 14h

Laboratory classes: 14h

(ENG) 2. LA INDUSTRIA QUÍMICA I: ACTIVITATS 4 I 5 (CONTINGUT 2).

Full-or-part-time: 12h

Laboratory classes: 12h

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Full-or-part-time: 4h

Theory classes: 4h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Aucejo, Antoni. Introducció a l'enginyeria química. València: Universitat de València, 2013. ISBN 9788437091624.
- Burton, George, i altres. Salters 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, Vol. 1 [on line]. Barcelona: Reverté, 1982 [Consultation: 14/09/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=12005. ISBN 8429140506.
- Vian Ortuño, Ángel. Introducción a la química industrial [on line]. 2ª ed. Barcelona: Reverté, 1994 [Consultation: 27/05/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?docID=3214793>. ISBN 842917933X.
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- Henley, Ernest J.; Rosen, Edward M. Cálculo de balances de materia y energía: métodos manuales y empleo de máquinas calculadoras [on line]. Barcelona: Reverté, 1973 [Consultation: 10/06/2022]. Available on: https://search-ebshost-com.recursos.biblioteca.upc.edu/login.aspx?direct=true&AuthType=ip,uid&db=nlebk&AN=2749627&site=ehost-live&ebv=EB&ppid=pp_I. ISBN 8429172289.
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- McCabe, Warren L.; Smith, Julian C.; Harriott, P. Unit operations of chemical engineering. 7th ed. Boston: McGraw-Hill, 2005. ISBN 0071247106.
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- 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: 06/11/2020]. Available on: <http://hdl.handle.net/2099.3/36154>. ISBN 848963607.
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Complementary:

- Costa Novella, E. Ingeniería química. Madrid: Alhambra, 1983. ISBN 8420509892.
- Perry, Robert H., dir. Manual del ingeniero químico [on line]. 7ª ed. Madrid: McGraw-Hill, 2001 [Consultation: 07/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6572. ISBN 9788448130084.
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