



PERSONA CIÈNCIA EMPRESA
UNIVERSITAT RAMON LLULL

COURSE: STRUCTURES AND INDUSTRIAL BUILDINGS

SUBJECT MATTER: Structures and industrial buildings

MODULE: Process and product engineering

STUDIES: MASTER IN CHEMICAL ENGINEERING

GENERAL CHARACTERISTICS*

Type: Basic training, Compulsory, Optional

Master thesis, Internship

Duration: Semestral **Semester/s:** 2

Number of credits ECTS: 3

Languages/s: Spanish, Catalan, English

DESCRIPTION

JUSTIFICATION

This subject provides the basic knowledge for the calculation of structures and components, for an understanding of the efforts that occur in structures linked to the chemical industry.

The course will provide bases for the design and design of buildings and industrial plants following criteria of safety, health, energy efficiency and sustainability through the use of appropriate construction systems.

COMPETENCES

- CB6 - The student has knowledge and understanding of what constitutes a basis or an opportunity to be original by developing and/or applying ideas, often in a research context.
- CB7 - The student can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to his/her field of study.
- CG1 - The student can design, manage, execute and expose a project.
- CE1 - The student is able to apply knowledge of mathematics, physics, chemistry, biology and other natural sciences – obtained through study, experience and practice – with critical reasoning to establish economically viable solutions to technical problems.

PREREQUISITES*

Admission to the Master's Degree in Chemical Engineering by the Ramon Llull University.

* These characteristics should not be modified without the approval of the bodies responsible for the higher-level academic structures (subject, module and / or syllabus).

COURSE: STRUCTURES AND BUILDING CONSTRUCTIONS

SUBJECT MATTER: Structures and industrial constructions

MODULE: Process and product engineering

STUDIES: MASTER IN CHEMICAL ENGINEERING

CONTENTS

1. Introduction.
2. Fundamentals of Structural Analysis.
3. Isostatic structures.
4. Hyperstatic structures
5. Architecture and Industrial Urbanism.
6. Project and building. Location and implantation of Industrial Plants.
7. Design and Construction of Industrial Plants.

METHODOLOGY

LEARNING ACTIVITIES*

Learning activities	Credits ECTS	Competences
Lectures	0,72	CB6
Solving sessions	0,28	CB7, CG1
Seminars	0,29	CE1
Presentations	0,04	CG1, CE1
Personal study and autonomous work	1,63	CB6, CB7
Evaluation activities	0,04	CB6, CB7, CG1, CE1
TOTAL	3,00	

TEACHING METHODOLOGY

Presentation of contents through presentation or explanation (possibly including demonstrations) by a professor.

Resolution of exercises, approach / resolution of problems and exposition / discussion of cases by a professor with the active participation of students.

Instruction made by a professor with the aim of reviewing, discussing and resolving doubts about the materials and topics presented in the concepts exhibition sessions and in the resolution sessions of exercises, problems and cases.

Personal work of the student to acquire the competences of each subject.

Oral or written tests to evaluate the competences acquired.

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ASSESSMENT

ASSESSMENT METHODS*

Assessment Methods	Weight	Competences
Final Exam	35% - 45%	CB6, CB7
Continuous Assessment Activities	30% - 40%	CB6, CB7, CG1, CE1
Activities	10% - 20%	CG1, CE1
Participation	10%	CE1

The final exam has a minimum grade of 4 out of 10

LEARNING OUTCOMES

- Knowledge that gives the base or opportunity to be original in the development and / or application of ideas.
- Ability to apply the knowledge acquired.
- Ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
- Ability to design and carry out a project.
- Ability to apply the knowledge acquired with critical reasoning to establish economically viable solutions to technical problems.

QUALIFICATION

See the table of evaluation methods.

ASSESSMENT OF THE COMPETENCES

The CB6 and CB7 competences will be obtained with the corresponding training activities and will be evaluated through the qualification of the final exam and the follow-up activities.

The CG1 competence will be obtained with the corresponding training activities and will be assessed with the qualification of the follow-up activities and the practices.

The CE1 competence will be obtained with the corresponding training activities and will be assessed with the qualification of the follow-up activities, the practices and the participation in class.

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BIBLIOGRAPHY (recommended and accessible for the student)

- ARGÜELLES ALVAREZ, R., "Cálculo de estructuras". E.T.S. Ings. de Montes, 1981.
- TIMOSHENKO y YOUNG. "Teoría de las Estructuras" Bilbao,URMO,1981
- ARGÜELLES ALVAREZ, R. "Estructuras de acero. Cálculo". Madrid: Bellisco, 2005.
- JIMENEZ MONTOYA, P., GARCÍA MESSEGUER,A.,MORAN CABRE,F. "Hormigón armado".Barcelona. Gustavo Gili, 2010.
- ORTIZ BERROCAL, L. "*Resistencia de Materiales*". Ed. McGraw-Hill. Madrid, 2007
- TIMOSHENKO, S.P. y GERE, J. M. "*Mecánica de Materiales*". Grupo Editorial Iberoamericano. México D.F.,2005
- Código Técnico de la Edificación, CTE. Ministerio de Vivienda. Marzo 2006
- MONJO CARRIÓ, J "Tratado de construcción: Sistemas". Editorial Munilla-Lería. 2001
- Guía técnica de aplicación: Reglamento de seguridad Contra incendios en los Establecimientos industriales (real decreto 2267/2004, de 3 de diciembre)

DOCUMENT HISTORY

PREVIOUS REVISIONS

February 15, 2015. Josep Maria Puigoriol, Núria Llaverías

February 25, 2016. Giovanni Gómez, Núria Llaverías

CURRENT REVISION

February 27, 2019. Giovanni Gómez, Núria Llaverías