



Universitat de Lleida

DEGREE CURRICULUM  
**THEORY OF STRUCTURES AND  
INDUSTRIAL CONSTRUCTION**

Academic year 2013-14

## Subject's general information

<b>Subject name</b>	Theory of Structures and Industrial Construction
<b>Code</b>	102307
<b>Semester</b>	2n Q Avaluació Continuada
<b>Typology</b>	Obligatòria
<b>ECTS credits</b>	6
<b>Theoretical credits</b>	3
<b>Practical credits</b>	3
<b>Department</b>	Enginyeria Agroforestal
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.
<b>Language</b>	Català 50% Castellà 50%
<b>Distribution of credits</b>	Francisco Javier Bradineras Esco 4.2 Josep Gasia i Gabernet 4.2

Francisco Javier Bradineras Esco (Estructures)  
Josep Gasia i Gabernet (Construccions industrials)

## Subject's extra information

### Suggestions

Attendance and the resolution of the proposed problems is highly recommended. Case studies should be solved as soon as possible after its request. It is not advisable to leave work till last minute. See bibliography is a good support for the subject.

### The course as part of the academic plan

Introduce new methods of structural design, including the matrix method and its adaptation to the calculation of second order, as required in the CTE. Give the students the basic knowledge and necessary information on construction technology so they have enough resources to schedule, manage and execute an industrial construction project with the help of other professionals. Provide the future engineer, criteria for choosing among the possible functional solutions, architectural and constructive, and also provide the technical criteria necessary to plan and manage the construction of a small industrial plant.

## Learning objectives

Donar a conèixer noves metodologies de càlcul estructural, incloent el càlcul matricial i la seva adaptació al càlcul de segon ordre, tal com s'exigeix en el CTE.

Donar als alumnes els coneixements bàsics i les dades necessàries sobre tecnologia de la construcció perquè tinguin els suficients recursos per a programar, gestionar y executar si es el cas un mínim projecte de construcció industrial amb l'ajut d'altres professionals.

Dotar al futur enginyer, dels criteris suficients per escollir entre les possibles solucions funcionals, arquitectòniques i constructives, d'una petita planta industrial i proporcionar també els criteris tècnics necessaris per a projectar i dirigir la construcció.

Veure apartat de competències.

## Competences

### Degree-specific competences

- Knowledge and ability to apply the principles of elasticity and resistance of materials to the behaviour of real solids.

#### Goals

- Students must be able to address real problems and propose simplifications to them, within the field of strength of materials

- Knowledge and ability for calculus, structural design and industrial constructions.

#### Goals

- Students must be able to calculate a structure and decide what kind of links are the best to the design system selected

### Degree-transversal competences

- Ability to gather and interpret relevant data in their field of study, and to emit judgements that include a reflection on relevant themes of a social, scientific or ethical nature

#### Goals

- Students must be able to interpret data of problems and results
- Ability to resolve problems and elaborate and defend arguments inside their field of study

## Goals

- The student must learn to propose and decide the order to follow for solving problems and real cases
- Ability to analyse and synthesize.

## Goals

- Students must be able to organize the results of the calculations and choose the relevant ones

## Subject contents

- \* Calculation of reticulated structures.
- \* Geotechnical study of the soil. Earthworks and layout.
- \* Basic materials. Reinforced concrete.
- \* Foundations and walls systems.
- \* Structural Systems.
- \* Roofs, walls and enclosures.
- \* Flooring.
- \* Quality control.
- \* Urbanization works.

## Methodology

Primer parcial: Estructures

Segon parcial: Construccions industrials

## Development plan

Consulteu normativa de l'assignatura al campus virtual.

## Evaluation

Examens: 60% (2 parcials 30%)

Casos pràctics: 40% (Informe pràctiques y exercicis de classe)

NOTA ASIGNATURA (NA):

NE: Nota Estructures

NC: Nota Construccions industrials

Si  $NE \geq 3$  i  $NC \geq 3$

$$NA = 0,5 \cdot NE + 0,5 \cdot NC$$

Si  $NE < 3$  o  $NC < 3$

$$NA = \text{Min}[(0,5 \cdot NE + 0,5 \cdot NC) ; (3)]$$

## Bibliography

- \* Cálculo Matricial de estructuras en 1er y 2do orden. Ramón Argüelles Álvarez
- \* Cálculo de estructuras. E.T.S.I.M. MADRID. Ramón Argüelles Álvarez
- \* Estructuras arquitectónicas e industriales, su cálculo. Enrique Nieto. ED. TEBAR.
- \* Teoría y cálculo sobre estructuras resistentes de prismas rectos. Santiago Rico Fernando. BELLISCO
- \* Curso de especialización en diseño de Naves Industriales. Análisis Matricial de estructuras de barras. José M. Iglesias.
- \* Hormigón Armado. Jimenez Montoya.
- \* Arte de proyectar en Arquitectura. Neufert.
- \* Tecnología de la construcción. G. Baud
- \* Estructura Metálica. Altos Hornos de Vizcaya
- \* Prefabricación de edificios y naves industriales. Monografías INTEMAC
- \* EHE. Instrucción de hormigón.
- \* Código técnico de la edificación (CTE).
- \* NTE. Normas tecnológicas de la edificación
- \* Pliego general de carreteras PG4.
- \* Altres. Informació de biblioteques i col·legis professionals