

28941 - Agri-industrial construction

Información del Plan Docente

Academic Year	2016/17
Academic center	201 - Escuela Politécnica Superior
Degree	437 - Degree in Rural and Agri-Food Engineering
ECTS	6.0
Course	3
Period	Second semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process designed for this course is based on the following methodologies: Theoretical sessions, Problem/project-based learning, and Computer lab sessions.

5.2.Learning activities

The program that the student is offered to achieve the expected results includes the following activities:

- Theoretical sessions (3 ECTS):

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- o The teacher explains the theoretical content of each session. One of the objectives of this activity will be the promoting of the participation of the students and the cooperative learning.
- o Problem-solving sessions. The teacher will resolve specific problems.
- Practical sessions (3 ECTS):
 - o Problem-based learning. Students, working individually or in groups, gain knowledge and skills by working to respond problems and questions.
 - o Computer lab sessions. Students use specific structural calculation software.
 - o Project-based learning. Students gain knowledge and skills by working with examples of real projects.

5.3.Program

Theoretical program

MODULE 1 - Fundamentals for the calculation of structures

1. Structural typologies in agricultural buildings
2. Constructive elements
3. Types of loads in structures
4. Load hypothesis

MODULE 2 - Metallic structures

1. Properties of steel
2. Characteristics of metal structures - gabled porch
3. Calculation of elements in tension
4. Calculation of elements in bending
5. Calculation for compressed elements

MODULE 3 - Precast and reinforced concrete structures

1. Properties of reinforced concrete
2. Characteristics of reinforced concrete structures
3. Calculation of elements in bending
4. Calculation for compressed elements
5. Justification and definition of structural prefabricated concrete elements
6. Construction details

MODULE 4 - Foundations

1. Geotechnical parameters
2. Types of foundations
3. Calculation of isolated footings

Practical sessions

1. Calculation of structural loads and Establishment of load combinations for the calculation of structures
2. Calculation of isolated elements of a metallic structures - pillars, beams and roof purlins

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3. Calculation of a gabled porch built in precast concrete using specific software.

4. Use of technical commercial information of precast concrete elements.

5. Calculation of superficial foundations through isolated footings.

5.4.Planning and scheduling

Week	Theoretical sessions (h)	Practical sessions (h)	Individual work (h)	Total (h)
1	2	2	6	10
2	2	2	6	10
3	2	2	6	10
4	2	2	6	10
5	2	2	6	10
6	2	2	6	10
7	2	2	6	10
8	2	2	6	10
9	2	2	6	10
10	2	2	6	10
11	2	2	6	10
12	2	2	6	10
13	2	2	6	10
14	2	2	6	10
15	2	2	6	10

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Total hours	30	30	90	150
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5.5. Bibliography and recommended resources

- BB** España. Ministerio de Fomento. EHE-08 : Instrucción de hormigón estructural : Con comentarios de los miembros de la Comisión Permanente del Hormigón / Ministerio de Fomento. 3ª ed. Madrid : Ministerio de Fomento, Secretaría General Técnica, 2009
- BB** España. Ministerio de la Vivienda. Código técnico de la edificación. Edición septiembre 2009 Madrid : La Ley, 2009
- BB** Estructuras de acero. [1] Cálculo / autores, Ramón Argüelles Álvarez ... [et al.] . 2ª ed. amp y act. Madrid : Bellisco, 2005
- BB** Estructuras de acero. [2], Uniones y sistemas estructurales / autores, Ramón Argüelles Álvarez ... [et al.]. 2ª ed. amp y act. Madrid : Bellisco, 2007
- BB** Jimenez Montoya, Pedro. Hormigón armado / Pedro Jiménez Montoya, Álvaro García Meseguer, Francisco Morán Cabré . 14ª ed., [reimp.] Madrid : Gustavo Gili, 2000 (reimp. 2007)
- CB** Calavera Ruiz, José. Cálculo de estructuras de cimentación / J. Calavera . 4a. ed. [Madrid] : INTEMAC (Instituto Técnico de Materiales y Construcciones), D.L. 2000
- CB** Calavera Ruiz, José. Una introducción a la prefabricación de edificios y naves industriales / J. Calavera Ruiz, J. Fernández Gómez . [Madrid : INTEMAC] , D.L.2001