

Academic Year/course: 2021/22

28941 - Agri-industrial construction

Syllabus Information

Academic Year: 2021/22

Subject: 28941 - Agri-industrial construction

Faculty / School: 201 - Escuela Politécnica Superior

Degree: 583 - Degree in Rural and Agri-Food Engineering

ECTS: 6.0

Year: 3 and 4

Semester: Second semester

Subject Type: Optional

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process designed for this course is based on the following methodologies:

- Lectures,
- Problem/project-based learning, and
- Computer lab sessions.

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures (3 ECTS):
 - 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 the cooperative learning.
 - Problem-solving sessions. The teacher will resolve specific problems.
- Practice sessions (3 ECTS):
 - Problem-based learning. Students, working individually or in groups, gain knowledge and skills by working to re to spend problems and questions.
 - Computer lab sessions. Students use specific structural calculation software.
 - Project-based learning. Students gain knowledge and skills by working with examples of real projects.

4.3. Syllabus

The course will address the topics:

Section 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

Section 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. The calculation for compressed elements

Section 3 ? Precast and reinforced concrete structures

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

Section 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 metallic structures ? pillars, beams and roof purlins
- 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.

4.4. Course planning and calendar

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
Total hours	30	30	90	150

4.5. 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)
- BC** Calavera Ruiz, José. Cálculo de estructuras de cimentación / J. Calavera . 4a. ed. [Madrid] : INTEMAC (Instituto Técnico de Materiales y Construcciones), D.L. 2000
- BC** Calavera Ruiz, José. Una introducción a la prefabricación de edificios y naves industriales / J. Calavera Ruiz, J. Fernández Gómez [Madrid : INTEMAC] , D.L.2001

The updated recommended bibliography can be consulted in:
<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28941>