

60561 - Rural infrastructure

Syllabus Information

Academic year: 2023/24

Subject: 60561 - Rural infrastructure

Faculty / School: 201 - Escuela Politécnica Superior

Degree: 546 - Master in Agricultural Engineering

ECTS: 6.0

Year: 1

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The main objective of the subject is that the student acquires the knowledge and technical skills that allow them to carry out the calculation project justifying some of the most common rural infrastructures related to building in the field of agronomic engineering.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), contributing to some extent to their achievement: Goal 9: Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and Foster Innovation. Specifically with Objectives 9.1 and 9.4.

2. Learning results

1. To describe technically the typologies of building slabs.
2. To justify the sizing and structural calculation of a one-way slab with prefabricated joists.
3. To describe technically the types of walls used in agro-industrial buildings.
4. To justify the sizing and structural calculation of a reinforced concrete basement wall and a cantilever wall.
5. To determine and interpret the contents of a geotechnical study.
6. To justify the dimensioning and structural calculation of concrete floors and foundations in agro-industrial and agricultural buildings.

Learning results 2, 4 and 6 are aligned with SDG 9 objectives 9.1 and 9.4.

3. Syllabus

1. Building floor slabs.
2. Retaining and basement walls.
3. Geotechnical study.
4. Foundation elements.
5. Concrete slabs supported on the ground.

4. Academic activities

Master classes: 30 h

Theoretical-practical sessions in which the contents of the subject will be explained.

Problems and cases: 30 h

Personal study: 87 h

Assessment tests: 3 h

5. Assessment system

The subject will be assessed by means of a global face-to-face test. The overall final exam will be similar in the two official calls of the academic year and the date will be established by the centre in the academic calendar.

The overall final test will consist of two different activities:

Activity 1 (A1): **Short-answer or multiple-choice written test.** This activity will be evaluated from 0 to 10 points and will constitute 30% of the final grade of the subject. A minimum grade of 3.5 out of 10 is required in this activity to pass the subject. The test will be conducted without any supporting documentation.

Activity 2 (A2): **Problem development written test.** This activity will be evaluated from 0 to 10 points and will constitute 70% of the final grade of the course. A minimum grade of 4.0 out of 10 is required in this activity to pass the subject. The test may be

taken with supporting documentation (notes, books, etc.). Computers, cell phones and internet access are not allowed.

Alignment with the SDGs

Assessment activity 2, consisting of problem development, includes content related to SDG Objectives 9.1 and 9.4 as the case studies focus on learning results 2, 4 and 6 which are linked to these goals.

Assessment criteria

- The concision and accuracy of the answers.
- The correct use of units in magnitudes.
- The approach to problem solving.
- The accuracy of the numerical results, as well as the order, presentation and interpretation of the results.
- Clarity in diagrams, figures and graphic representations.
- Spelling mistakes.

Calculation of the final grade:

The final grade (CF) out of 10 points will be obtained by applying the following equation:

$$CF = [0.30 \times \text{Grade A1}] + [0.70 \times \text{Grade A2}].$$

In order to pass ($CF \geq 5.0$) it is essential that: $[\text{grade A1} \geq 3.5]$ and $[\text{grade A2} \geq 4.0]$.

In the event that the above requirements are not met, the final grade will be obtained as follows:

- If $CF \geq 4$, the final grade will be: Fail (4.0)
- If $CF < 4$, the final grade will be: Fail (CF)

The grade of the A1 and A2 activities in the first call will not be saved for the second call.