Universidad Zaragoza

Academic Year/course: 2024/25

28928 - Livestock farming facilities and equipment

Syllabus Information

Academic year: 2024/25
Subject: 28928 - Livestock farming facilities and equipment
Faculty / School: 201 - Escuela Politécnica Superior
Degree: 583 - Degree in Rural and Agri-Food Engineering
ECTS: 6.0
Year:
Semester: Second semester
Subject type: Optional
Module:

1. General information

The objectives of the subject are:

- Acquire criteria to establish the basis for the design of livestock housing.
- Determine the environmental, physiological and space requirements of the main livestock species.
- Establish the different aspects of environmental control in livestock housing.
- Describe technically and dimension the necessary installations for ventilation, heating and cooling in livestock housing.
- Describe technically and dimension the necessary equipment for feed and water distribution, as well as other livestock housing facilities: lighting, milking, sanitation and waste management.

These 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 2: zero hunger; Goal 9: industry, innovation and infrastructure; Goal 12: responsibleproduction and consumption.

2. Learning results

- To be able to select and dimension the space and feeding needs for a livestock housing, taking into account the principles of animal welfare and according to current regulations.
- To be able to calculate both the insulating capacity of livestock buildings and the heat balances, technically justifying the choice of construction materials. For this purpose, in addition to his knowledge on the influence of the animal in the modification of the environment of livestock farms, on the mechanisms of heat transmission in the constructive elements and on thermal insulating materials and their qualities, he will take into account sustainability and energy efficiency criteria.
- To be able to quantify the ventilation and air conditioning needs of livestock housing, selecting and sizing the components of the corresponding installations in livestock housing, ensuring that meets the needs of animal welfare and is also sustainable. Prioritize a more efficient use of resources and promote the adoption of clean and environmentally sound technologies and processes, including theintegration of renewable energies in agricultural facilities.
- Be able to describe and technically justify other livestock housing facilities: lighting, milking, sanitation and waste management. In waste management, seek to reduce waste generation and minimize its adverse effects on the environment.

3. Syllabus

T1. Importance of agricultural facilities in the general context of animal husbandry.

T2. Concept of animal welfare.

T3. European, National and Autonomous Regulations related to Agricultural Lodging.

T4. Environmental requirements of the main livestock species.

T5. Main methods of heat exchange between the animal and the environment.

T6. Isolation.

T7. Psychrometry.

T8. Ventilation.

T9. Heating and cooling.

T10. Energy saving and efficiency in livestock facilities.

T11. Design and sizing of swine housing.

T12. Design and dimensioning of housing in laying and meat poultry farming.

T13. Design and sizing of housing for dairy and beef cattle.

T14. Design and dimensioning of sheep housing.

T15. Design and sizing of goat housing.

4. Academic activities

1.Lectures. Face-to-face mode in which the contents of the proposed topics will be developed: 30 h.

2.*Problem solving and case studies*. Face-to-face mode in which problems related to the contents of the subject will be solved: 25 h.

3.*Technical visits*. Face-to-face mode designed for students to acquire a practical and real vision of the theoretical and practical contents carried out throughout the term: 5 h.

4.*Study and independent work*. During this non-attendance mode, students will dedicate themselves to personal study:87 h.

5.*Assessment tests.* 3 h

5. Assessment system

The subject will be assessed by means of:

1. Completion of a written test of the Engineering Block (according to the program). The value will be 50% of the final grade of the subject. The test will consist of theoretical questions and problems. The total grade for the test will be out of 5 points, of which 1.5 points will correspond to the theory part and 3.5 points to the problems part.

Students need ≥ 2.5 points to pass the Engineering portion.

2. Completion of a written test and a practical work in the Animal Production Block (according to the syllabus). The value of this part will be 50% of the final grade of the subject. The written test will consist of the formulation of several short questions or test type questions related to all the contents taught during the academic term. In addition, a practical work on the dimensioning of a farm will be carried out. The total grade for the test will be out of 5 points. Students need ≥ 2.5 points to pass the animal production part. In the papers, the quality of the scientific information provided and the incorporation of sustainability criteriaby the student in the development of his proposal will be especially valued.

The success rates for the subject in the last three years are: 2020/21: 100%; 2021/22: 100%; 2022/23: 100%

6. Sustainable Development Goals

2 - Zero Hunger
9 - Industry, Innovation and Infrastructure
12 - Responsible Production and Consumption