

Course Unit	Building Design and Project		Field of study	Rural Engineering	
Bachelor in	Agronomic Engineering		School	School of Agriculture	
Academic Year	2022/2023	Year of study	3	Level	1-3
Type	Semestral	Semester	1	ECTS credits	6.0
Code	9086-307-3102-00-22				
Workload (hours)	162	Contact hours	T	-	TP
			60	PL	-
			TC	-	S
			E	-	OT
			20	O	-

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) José Carlos Batista Couto Barbosa

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Understanding plans and other documents from farm buildings construction.
2. To carry out, or participate on a team that develops the project from farm buildings.
3. Identifying requisites and conditions to consider when planning farm buildings and equipment.
4. Identifying basic requisites and conditions to consider when planning farm building, animal housing and facilities.

Prerequisites

Before the course unit the learner is expected to be able to:
Basic knowledge of Mathematics, Trigonometry and Physics.

Course contents

Basic concepts about building plan and farm facilities and equipment. Main aspects to consider when dimensioning and build usual farm facilities. The building project. Plantation plans. Animal housing and facilities. Environmental control in farm buildings. Project and plan components. Practical works in order to carry out project and plan components for agricultural activities

Course contents (extended version)

1. Introduction
 - Lessons. Documentation and bibliography. Examination
 - Purpose and objectives of this course.
 - General concepts about project, farm buildings, farm facilities and equipment
 - The importance of farm buildings, farm facilities and equipment
2. Main aspects to consider when dimensioning and build usual farm facilities
 - Aspects to consider when planning and dimensioning farm facilities
 - Building models and construction
 - Hay and haystack storage
 - Machinery storage and farm shop
 - Pesticides and fuel storage
 - Silos: characteristics and use
 - Forage silos: characteristics and use
 - Facilities and structures with posts, mesh and wire
3. The project and plan of farm buildings
 - Importance and purpose of building projects
 - Legislation related to building activities. General aspects
 - Procedures for licensing agricultural and agro-food activities
 - Procedures for licensing livestock housing and other animal breeding activities
 - Plan components required for licensing procedures
 - Site selection to build the facilities
 - Building place, site plan and building orientation
4. Plantations plans
 - Calculation and dimensioning the plantation plan
 - Preparing plan components: the development proposal and the plan view
5. Planning buildings for animal housing and facilities
 - Housing systems in animal farming
 - Buildings and facilities
 - Plan components and building projects
6. Environmental control in farm buildings
 - Indoor environmental conditions in farm buildings
 - Importance and effects of environmental conditions
 - Thermal control and buildings insulation
 - The importance of the building orientation
 - Ventilation
 - Heating
 - Cooling and refrigeration
 - Lighting
7. The project and plan
 - Concepts and designations of the plan components
 - Basic concepts about interpretation and understanding the plan components
 - The presentation of the main plan components: plan view, cross sections, elevations, details
 - Basic concepts about technical drawing and building plans
 - Interpretation and representation of the plan components for agricultural activities
 - Planning of the agricultural project and elaboration of the plan components
8. Practical work in order to carry out project and plan components for agricultural activities
 - Dimensioning farm buildings and facilities
 - To perform building design for farm facilities: plan view, cross sections, elevations, details
 - To perform project components: development proposal, bill of quantities
 - To present project and plan components
 - Practical work in order to prepare licensing livestock housing and other agrifood activities

Recommended reading

1. Chiumenti , Roberto (2015) Costruzioni rurali. Edagricole, Bologna.
2. Llorens, Josep Lluís S. (2014) Instalaciones e infraestructuras para la actividad agraria. Ed. Sintesis, Madrid

Recommended reading

3. Pigato, Claudio (2014) Genio rurale. Costruzioni rurali. Mondadori Ed. , Milano
4. Lindley, J. A. ; Whitaker, J. H. (1996) Agricultural buildings and structures. ASAE, St Joseph MI, USA.
5. Fuentes Yague, J. L. (1992) Construcciones para la agricultura y la ganaderia. Ediciones Mundi-Prensa, Madrid.

Teaching and learning methods

Lecture about course contents and task-related training. Working classes in order to carry out tasks for planning and design farm building project.

Assessment methods

1. Alternative 1: Continuous Assessment - (Regular, Student Worker) (Final)
 - Practical Work - 40% (Practical works)
 - Intermediate Written Test - 10%
 - Final Written Exam - 50%
2. Alternative 2: Erasmus - (Student Worker) (Final)
 - Projects - 50%
 - Final Written Exam - 50%
3. Alternative 1: Final Evaluation - (Regular, Student Worker) (Final, Supplementary, Special)
 - Final Written Exam - 100% (Includes practical examination)

Language of instruction

1. Portuguese, with additional English support for foreign students.
2. Spanish

Electronic validation

José Carlos Batista Couto Barbosa	Arlindo Castro Ferreira Almeida	Albino António Bento	José Carlos Batista Couto Barbosa
09-12-2022	12-12-2022	20-12-2022	20-12-2022