DEGREE CURRICULUM

BUILDINGS AND EARTHWORKS

Coordination: PUIGDOMENECH FRANQUESA, LUIS

Academic year 2022-23

BUILDINGS AND EARTHWORKS 2022-23

Subject's general information

<table>
<tr><td>Subject name</td><td>BUILDINGS AND EARTHWORKS</td></tr>
<tr><td>Code</td><td>102579</td></tr>
<tr><td>Semester</td><td>1st Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
<table>
<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Bachelor's Degree in Agricultural and Food Engineering</td><td>4</td><td>COMPULSORY</td><td>Attendance-based</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>6</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
<table>
<tr><th>Activity type</th><th>PRACAMP</th><th>PRALAB</th><th>PRAULA</th><th>TEORIA</th></tr>
<tr><td>Number of credits</td><td>0.2</td><td>1.2</td><td>1.5</td><td>3.1</td></tr>
<tr><td>Number of groups</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
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<tr><td>Coordination</td><td>PUIGDOMENECH FRANQUESA, LUIS</td></tr>
<tr><td>Department</td><td>AGRICULTURAL AND FOREST ENGINEERING</td></tr>
<tr><td>Teaching load distribution between lectures and independent student work</td><td>Lectures: 60h
Student work: 90h</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
<tr><td>Language</td><td>Catalan / Spanish</td></tr>
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BUILDINGS AND EARTHWORKS 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
FERNANDEZ SERRANO, ALVARO	alvaro.fernandezserrano@udl.cat	3	
PUIGDOMENECH FRANQUESA, LUIS	lluis.puigdomenech@udl.cat	3	

Learning objectives

The student upon passing the subject must be able to:

1. Know the behavior of the soil as a building material
2. Know the main soil tests and interpret a geotechnical report
3. Design the main elements of the project of a rural road (plan, elevation, type section, esplanade, drainage and firm)
4. Design the main elements of the project of an irrigation raft (stability of the dike, waterproofing, landfill)
5. Design the structure of an industrial shed and its foundation

Competences

General competences

CG1. Capacity for the previous preparation, conception, drafting and signing of projects whose purpose is the construction, reform, repair, conservation, demolition, manufacture, installation, assembly or exploitation of movable or immovable property that by its nature and characteristics are included in the own technique of agricultural and livestock production (facilities or buildings, farms, infrastructure and rural roads), the agri-food industry (extractive, fermentative, dairy, canning, horticultural, meat, fisheries, salting and in general, any other dedicated to the elaboration and / or transformation, conservation, manipulation and distribution of food products) and gardening and landscaping (urban and / or rural green spaces - parks, gardens, nurseries, urban trees, etc. -, public or private sports facilities and environments subject to landscape recovery).

CG2. Ability to direct the execution of the works subject to projects related to agri-food industries, farms and green spaces and their buildings, infrastructure and facilities, the prevention of risks associated with this execution and the management of multidisciplinary teams and human resources management, in accordance with deontological criteria.

Specific competences

CEMCR1. Bases and technology of rural constructions. Soil mechanics. Materials. Material resistance. Structure Design and calculation. Agricultural constructions. Infrastructure and rural roads.

Subject contents

Block 1

Unit 1: Soil mechanics. Characteristics of the soil as a building material.

Unit 2: Paths. Plotting, slope stability, surface drainage.

Unit 3: Irrigation rafts. Dock materials, stability, waterproofing sheets.

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Block 2

Unit 4: The industrial warehouse- Vocabulary, structural typology

Unit 5: Enclosures. Enclosure materials and structure fixings

Unit 6: Straps. Design, sizing and testing criteria

Unit 7: Main structure: portico, truss. Design criteria and joints

Unit 8: Secondary structures and local reinforcements. Braces, braces, stiffeners, bases

Unit 9: Pavements. Design criteria.

Unit 10: Foundations. Geotechnics and design of isolated footings

Methodology

Practices

- Exercises and examples in the classroom and at home
- Practical case of a rural road

Development plan

Units 1 to 3: professor Álvaro Fernández, 3 credits

Units 4 to 10: professor Lluís Puigdomènech, 3 credits

Evaluation

Contents	Evaluation	Weight %	
Part 1: Units 1 to 3	Computer work	15	50
	Examination test	35	
Part 2: Units 4 a 10	Test (Campus Virtual)	15	50
	Exam	35	
	TOTAL	100	

Pass criteria (these 3 requirements are mandatory):

1. 0.5·(Part1) + 0.5·(Part2) ≥ 5.0
2. Part1 ≥ 4.0
3. Part2 ≥ 4.0

Students that fail any of these 3 requirements will do the makeup exam. Those students will have to improve the marks Part 1 or Part 2 below 4.0.

Students that reach requirements 2 and 3 but fail requirement 1 will be allowed to choose the mark (Part1 or Part2) to improve in the makeup exam

There aren't makeup exams for Computer work and Test (Campus virtual)

The final mark for any student after the makeup exam will not be greater than the final mark for any student who passed the subject without makeup

Bibliography

Basic references

AASHTO. 2001. Guidelines for geometric design of very low-volume local roads (ADT<=400). Washington: American Association of State Highway and Transportation Officials (AASHTO).

Dal-Ré Tenreiro R. 2001. Caminos rurales: Proyecto y construcción. 3ª ed. Madrid: Mundi-Prensa.

España. Ministerio de Fomento. 2011. Pliego de prescripciones técnicas generales para obras de carreteras y puentes (PG-3). Madrid.

Arnedo, A. 2009. Naves industriales con acero. Publicaciones APTA. 434 pp.