Universitat de Lleida

DEGREE CURRICULUM

# AGRICULTURAL BUILDING DESIGN

Coordination: PUIGDOMENECH FRANQUESA, LUIS

Academic year 2023-24

# AGRICULTURAL BUILDING DESIGN 2023-24

## Subject's general information

<table>
<tr><td>Subject name</td><td>AGRICULTURAL BUILDING DESIGN</td></tr>
<tr><td>Code</td><td>102521</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>2</td><td>COMPULSORY</td><td>Attendance-based</td></tr>
<tr><td>Master's Degree in Agronomic Engineering</td><td></td><td>COMPLEMENTARY TRAINING</td><td>Attendance-based</td></tr>
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</td></tr>
<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><td>PRAULA</td><td>TEORIA</td></tr>
<tr><th>Number of credits</th><td>1.8</td><td>4.2</td></tr>
<tr><th>Number of groups</th><td>1</td><td>1</td></tr>
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</td></tr>
<tr><td>Coordination</td><td>PUIGDOMENECH FRANQUESA, LUIS</td></tr>
<tr><td>Department</td><td>AGRICULTURAL AND FOREST SCIENCES AND ENGINEERING</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
<tr><td>Language</td><td>Catalán: 100%<br>Castellano: occasionally just for clarification<br>English: occasionally just for clarification</td></tr>
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# AGRICULTURAL BUILDING DESIGN 2023-24

| Teaching staff | E-mail addresses | Credits taught by teacher | Office and hour of attention |
|---|---|---|---|
| PUIGDOMENECH FRANQUESA, LUIS | lluis.puigdomenech@udl.cat | 6 | |

## Subject's extra information

The subject, common per the four specialties within the degree in Agricultural and Food Engineering, deals with the basic concepts of Statics and Resistance of Materials applied to construction elements and which will then be applied to the respective construction subjects of each specialty.

Requirements: Physics I

Recommendations: check the Virtual Campus regularly

## Learning objectives

R1 Assess the suitability of a structural model applicable to a real construction element

R2 Estimate the extreme values of reactions, internal efforts and stresses for sizing and first checks on isostatic beams

R3 Estimate possible deformations in isostatic beams

R4 Evaluate reactions, stresses, internal efforts and deformations in hyperstatic beams

## Competences

General competences

The subject will support the achievement of the following general competences:

CG1. Capacity for the prior preparation, conception, drafting and signing of projects that have as their object the construction, reform, repair, conservation, demolition, manufacture, installation, assembly or exploitation of movable or immovable property that by their 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 undergoing 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

It will also support knowledge, understanding and use of some principles in:

CEMC7. Rural environment engineering: calculation of structures and construction, hydraulics, engines and machines, electrical engineering, technical projects.

# AGRICULTURAL BUILDING DESIGN 2023-24

## Subject contents

Each unit considers practical situations in agricultural environment and mentions components, construction aspects and structural analysis

**Block 1**

**Unit 1**. Agricultural cable and arches

**Unit 2**. Masonry and gravity structures.

**Unit 3**. Beams. Reactions and internal efforts

**Block 2**

**Unit 4**. Beams. Stresses in sections

**Unit 5**. Beams. Deformations

**Unit 6** Introduction to hyperstatic beams

## Development plan

## Evaluation

- Block 1: non presencial exam, scoring weight **20%**
- Block 2: presencial exam, scoring weight **40 %** (scheduled)
- Block 3: presencial exam, scoring weight **40 %** (scheduled)

Formal correction, good writing, clarity, order and spelling are required in exams. The presence of some fundamental misconception, order of magnitude or contradiction may be sufficient cause for an exam to be classified as suspense. The mathematical expressions will have to be written correctly and the numerical results will be accompanied by units of measurement.

Having failed by partial exams, there would be a final exam for retaking the failed blocks; the maximum obtainable result in this exam would be the most result between - 5,0 - or 0,5 points less than the lowest one obtained by partial exams.

**Alternative evaluation**: unique exam of the whole content of the matter and at 3$^{rd}$ block exam. In case of failing the exam, there is a retaking exam in the scheduled date.

## Bibliography

Considering the great amount of bibliography, the interesting keywords to be able to carry out the bibliographic search both in the resources of the Library and in the network would be: Statics, Strength of Materials, Theory of Structures, Structural Analysis, Construction.

There is a booklet (15€) available que at Servei d'Edicions i Publicacions de la UdL or even you can read it in Library: Fernandez A. et al., 2012. Problemas de resistencia de materiales. Ed. Universitat de Lleida.117 pp.

It may be interesting to consult structural regulations, which will be provided in the Virtual Campus, and which is also available in internet. All AENOR regulations are also available in the Dades Base / AENOR resource in the Library.