Universitat de Lleida

DEGREE CURRICULUM

STRUCTURAL MATERIALS

Coordination: PUIGDOMENECH FRANQUESA, LUIS

Academic year 2022-23

STRUCTURAL MATERIALS 2022-23

Subject's general information

Subject name	STRUCTURAL MATERIALS
Code	102578
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Bachelor's Degree in Agricultural and Food Engineering	3	COMPULSORY	Attendance-based

Course number of credits (ECTS)	6
Type of activity, credits, and groups	

Activity type	PRALAB	PRAULA	TEORIA
Number of credits	1	2	3
Number of groups	1	1	1

Coordination	PUIGDOMENECH FRANQUESA, LUIS
Department	AGRICULTURAL AND FOREST ENGINEERING
Important information on data processing	Consult this link for more information.
Language	Català: 100%

STRUCTURAL MATERIALS 2022-23

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

Subject/matter in the whole degree plan

"Materials Estructurals" is a middle level subject of construction matters in the Rural and Environmental Engineering mention

Compulsary previous subjects: - Construcció (102521)

Learning objectives

Competences

The non-unique solution of problems with different structural materials, the subject promotes the development of the general competence:

CG8. Ability to solve problems with creativity, initiative, methodology and critical reasoning.

The specific competence in the present subject is highlighted in bold:

CEMCR2. Bases and technology of rural buildings. **Soil Mechanics**. **Materials**. Strength of materials. **Structural design**. Agricultural buldings. Rural infrastructure and roads.

Subject contents

Unit 1. Norms. Denomination amb mechanical propperties of steel, concrete, timber and soil. Most rellevant ULS and SLS of each material

Unit 2. Durability. Standard measures

Unit 3. Quality control. Sampling, evaluation and acceptance methods

Unit 4. Verifications on materials. Plasticity. Cracking. Anisotropy. Combined materials

Unit 5. Verifications on structures. Buckling. Deformation. Reology

Unit 6. Building processes

Unit 7: Unions. Tipology considering structural material.

Methodology

Development plan

The subject activities will be:

- **Lectures**, some of them (mainly in Environmental Control) will need calculus skill

- Some **activities** (related to visits and lectures), **optional**, **no scoring weight**

- **Tests** (See Evaluation)

- **Partial exams** (See Evaluation)

Evaluation

- **1st partial exam** (see schedule): with the contents of themes from 1 to 3, **rating score 50% weight**, compulsary passing or obtaining a **mínimum score of 4,0 to compensate**.

- 2nd partial exam parcial (see schedule): with the content of themes from 4 to 7, **rating score 50% weight**, compulsary passing or obtaining a **mínimum score of 4,0 to compensate**.

The maximum subject result that can be obtained in a final exam never will be more than the lowest passed result obtained at first instance.

Bibliography

A) Steel

Mº de Transportes, Movilidad y Agenda Urbana, 2021. Código Estructural

Comisión Permanente de Estructuras de Acero, 2011. Instrucción de acero estructural EAE. Ed. Mº Fomento, 655 pp.

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

Eurocodi 3, UNE-EN 1993-1-1

B) Timber

Código Técnico de la Edificación, Documento Básico, Seguridad Estructural, Madera (CTE-DB- SE-M) www.codigotecnico.org . Ed. Mº Fomento, 126 pp.

Comité técnico AEN/CTN 140, 2010. Proyecto de estructuras de madera, Eurocódigo 5. Ed. AENOR

Argüelles R., Arriaga F., Martínez J.J., 2000. Estructuras de madera : diseño y cálculo. Ed. AITIM., 730 pp.

Eurocodi 5, UNE-EN 1995-1-1

C) Concrete

Mº de Transportes, Movilidad y Agenda Urbana, 2021. Código Estructural

Código Técnico de la Edificación, Documento Básico, Seguridad Estructural, Cimientos (CTE- DB-SE-C) www.codigotecnico.org . Ed. Mº Fomento, 160 p.

Jiménez Montoya P *et al.* 2009. *Hormigón armado.* 15ª ed. Barcelona: Gustavo Gili, 629 pp. Calavera J., 2008. Proyecto y cálculo de estructuras de hormigón. Ed. Intemac, 2 tomos.

Eurocodi 2, UNE 1992-1-1

D) Soil

Código Técnico de la Edificación, Documento Básico, Seguridad Estructural, Cimientos (CTE- DB-SE-C) www.codigotecnico.org . Ed. Mº Fomento, 160 p.

Guía de Cimentaciones en Obras de Carretera. (GCOC) Mº Fomento. 303 p.D) Sol