Universitat de Lleida

DEGREE CURRICULUM

CONSTRUCTION SYSTEMS AND TYPOLOGY

Coordination: CASTRO CHICOT, JOSE RAMON

Academic year 2018-19

Subject's general information

Subject name	CONSTRUCTION SYSTEMS AND TYPOLOGY
Code	101413
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	Degree: Bachelor's Degree in Architectural Technology and Building Construction; Course: 2; Character: COMPULSORY; Modality: Attendance-based
Course number of credits (ECTS)	6
Type of activity, credits, and groups	Activity type: PRAULA / TEORIA; Number of credits: 3 / 3; Number of groups: 1 / 1
Coordination	CASTRO CHICOT, JOSE RAMON
Department	AGRICULTURAL AND FOREST ENGINEERING
Teaching load distribution between lectures and independent student work	60 hours of class and 90 hours of autonomous work.
Important information on data processing	Consult this link for more information.
Language	Catalan

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CASTRO CHICOT, JOSE RAMON	jrcastro@eagrof.udl.cat	6	

Subject's extra information

The course develops the usual construction systems in the building: continuous load-bearing walls systems, framing systems and prefabrication systems.

The practical aspect is to solve the student through practices. The subject understands that the freehand drawing is the only way of thinking architectural construction adapted to small and large scale. Freehand drawing is the grammar of technical architect, his way of relation to other professionals involved in building.

Subject being taught in the 2nd semester of the 2nd year. It belongs to the module "Specific training", namely the matter "Techniques and technologies of building"

Learning objectives

- Freehand drawing construction details
- Formulate and solve by drawing, the intrinsic problems of the building.
- Calculate and adapt the building to the existing parameters established by the Basic Documents of the CTE systems.

Competences

University of Lleida strategic competences

- **UdL3** . Mastering TIC

Degree-transversal competences

- **EPS2**. Ability to reunite and interpret relevant data, inside an area of study, to express reasons which include reflecting upon relevant subjects of a social, scientific or ethical nature.
- **EPS7**. Ability to work in situations where information is lacking or you are under pressure.
- **EPS8**. Ability to pan and organise the personal work.
- **EPS13**. Ability to consider the socio-economical context as well as the criteria of sustainability in the solutions of engeneering.

Degree-specific competences

- **GEE12**. Knowledge of the traditional or prefabricated construction systems used in building, their varieties and the physical and mechanical characteristics which define them.
- **GEE13**. Ability to apportion construction materials to the type and use of the building, manage and direct the reception and quality control of the materials, their use, the execution control of the work units and the realisation of trials and final tests.
- **GEE14**. Knowledge of the historical evolution of construction techniques and elements and of the structural systems which have given rise to the stylistic forms.
- **GEE15**. Aptitude to identify the constructive elements and systems, define their function and compatibility, and their use in the construction process. Raise and resolve constructive details
- **GEE16**. Knowledge of the specific procedures for controlling the material execution of a building work.

- **GEE17**. Knowledge of the evaluation of the environmental impact of the building and demolition processes, of the sustainability in building and of the procedures and techniques to evaluate the energy efficiency of buildings.
- **GEE18**. Aptitude to intervene in the rehabilitation of buildings and in the restoration and construction of the existing heritage.
- **GEE19**. Ability to elaborate manuals and maintainance plans and manage their implementation in a building.

Subject contents

T1.-Systems continue construction. Ceramic brick walls

- 1.1.-Technical constructive and architectural form.
- 1.2.-Constructive elements and their articulation. The concept of "closed box".
- 1.3.-Code. CTE-DB-SE-F
- 1.4.-Calculations of masonry walls according to CTE-DB-SE-F
- 1.5.-The Termoarcilla. Criteria for project execution.

T2.-Systems building - structural framework

- 2.1.-Basic geotechnical characteristics of the soil.
- 2.2.-Behaviour of systems building- structural against settlements.
- 2.3.-Foundations surface.
- 2.4.-Foundations deep.
- 2.5.-Old ceilings and current floors.
- 2.6.-Types of slabs.
- 2.7.-Vertical communication cores: stairs and lifts.
- 2.8.-Traditional facades.
- 2.9.-Ventilated facades.
- 2.10.-Continuous surfacing.
- 2.11.-Plain roof.
- 2.11.-Sloped roof.

T3.-Systems prefabrication in building

- 3.1.-Industrialized construction techniques.
- 3.2.- To industrialize the bulk of the building.
- 3.3.-The prefabrication as an alternative to conventional construction of buildings.

Methodology

- **Master class**. Explanations and PowerPoint presentations and blackboard work, done in the classroom.
- **Work practices and Notebook**. During the course, students must perform a series of practices and a work notebook. These practices will be directed by the teacher in order to achieve the desired levels.

Development plan

T1.-System construction continue. Walls masonry ceramics.

T2.-System construction-structural framework.

T3.-Systems prefabrication in building.

Week	Methodology	Temary	Attendance hours	Hours of autonomous work
1	Presentation Master class	**T1. System construction continue** Practice nº 1: Work Notebook Relationship between building techniques and architectural form in buildings masonry ceramics The concept of "closed boxes"	4	6
2	Master class	The system construction-structural masonry walls ceramic according to current regulations CTE-DB-SE-F Verification of bearing capacity of masonry walls according ceramics DB-SE-F. Example calculation.	4	6
3	Master class	"Termoarcilla". Criteria for project and execution.. Presentation Practice No. 2: Redesigning the first two rows of two houses masonry ceramics **T2. System construction-structural framework**. Basic geotechnical characteristics of the soil	4	6
4	Master class	Behavior of different structural systems in front of settlement of land. Surface foundations. Execution and construction	4	6
5	Master class	Deep foundations. Execution and construction. Slabs.The old slabs and the current slabs.	4	6
6	Master class	Current slabs: unidirectional and bidirectional Predimensioning floor slabs according to EHE 08	4	6
7	Master class	Vertical elements of communication: stairs and lifts Rheological properties of building materials	4	6
8	Master class	CTE-DB-HS1.Humidity. Facades and basement walls Practice**:** Descent of loads and construction details	4	6
9	PA1. Written exam			
10	Master class	The traditional facade The ventilated facade	4	6

11	Master class	CTE-DB-HR. Protection against noise. Simplified option. CTE-DB-HR. Rehabilitation	4	6
12	Master class	Continuous surfacing	4	6
13	Master class	Flat roofs Sloping roofs	4	6
14	Master class	**T3.-Systems prefabrication in building.** The techniques of industrialized construction	4	6
15	Master class	Apartments industrialized. Examples made. Delivery Practice nº1: Work Notebook	4	6

Evaluation

Evaluation activities	%	Dates
PA1. Evaluation 1	40	Week 9
PA 2. Evaluation 2	32,5	Weeks 16 and 17
Practice nº1	20	Along the course
Practice nº2	2,5	Along the course
Practice nº3	5	Along the course
Exam recovery	50	Week 19

Note exams:

- The subject is approved with final 5
- In weeks 9 and 16 / 17a are made evaluation tests programmed (written exams) PA1 and PA2. The test PA1 has a weight of 40% and the test PA2 has a weight of 32.5% of the final grade for the course.
- Evaluations do not eliminate material covered.
- Following the guidelines of the Framework Academic Degrees of EPS in the 19th week can be recovered subject

Note exercises

- Practices No. 1, No. 2 and No. 3 are obligatory and have a weight of 27.5% compared to the final of the subject.
- Failure of a practice or its delivery out of time -without notice due justificada- 0 leads in practice accordingly. Unrealized practices or suspended may not be delivered or retrieved during the week of scheduled recovery.
- Recovery is an independent examination. No longer keep any note of the continuous evaluation. The maximum score is 5.

Bibliography

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- PARICIO, Antoni; Secrets d'un sistema constructiu: L'Eixample. Edicions UPC. Barcelona. 2001

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- MAÑA, F; El gros de l'obra. Uns apunts de construcció. Edicions UPC. Barcelona. 2000

- AAVV; Tratado de construcción. Fachadas y cubiertas (I). Munilla-Leria. Madrid. 2002

- AAVV; Tratado de construcción. Fachadas y cubiertas (II). Munilla-Leria. Madrid. 2002

- PARICIO, Ignacio; La fachada de ladrillo. Bisagra.ITEC. Barcelona. 1998.

About construction details

- ALCALDE, F; Banco de detalles arquitectónicos. Distribuidora Díaz de Santos, SA.Sevilla. 2003.

- PERMANYER, Eduard; El detall constructiu a la pràctica de la professió. Publicacions del Col·legi Oficial d'Arquitectes de Catalunya. Barcelona. 1981.