



Universitat de Lleida

DEGREE CURRICULUM

SUSTAINABLE CONSTRUCTION I

Academic year 2015-16

Subject's general information

Subject name	SUSTAINABLE CONSTRUCTION I
Code	101431
Semester	1r Q
Typology	non compulsory
ECTS credits	6
Theoretical credits	0
Practical credits	0
Office and hour of attention	Send an email in order to arrange a date
Department	Department of computer science and Industrial Engineering
Modality	Presencial
Important information on data processing	Consult this link for more information.
Language	English
Degree	Degree in Architectural Technology
Office and hour of attention	Send an email in order to arrange a date
E-mail addresses	gperez@diei.udl.cat jcoma@diei.udl.cat

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PhD candidate Julià Coma Arpón

Subject's extra information

Subject that requires continuous work throughout the semester in order to achieve the established goals. The documentation "Sustainable Construction 1 - Quaderns EPS" of this subject can be found in the photocopying site located in the Aulari building. It is recommended to frequently visit the Virtual Campus of this subject because it announces all the information in it.

Learning objectives

See Competences section

Competences

University of Lleida strategic competencies

- **UdL2 Command of a foreign language.**

Objetives

- Search for information in foreign language.

Degree specific competences

- **GEE12. Manufactured or traditional constructive systems and materials knowledge, its varieties and physics and mechanical characteristics that define them.**

Objetives

- Writing a report about Sustainable Construction that reflects all aspects of it.

- **GEE13. Capacity to adapt the materials of construction to the typology and use of buildings; manage the reception and the quality control of the materials, its use in the building works, the execution control of the units of work and the performance of tests and final proofs.**

Objetives

- Writing a report about Sustainable Construction that reflects all aspects of it.

- **GEE20. Knowledge of the environmental impact evaluation for building and demolition process, of sustainability in buildings, and of the procedures and techniques to determine the energy efficiency in buildings.**

Objetives

- Take into account all regulatory and environmental implications of materials and construction solutions used.

- **GEE21. Capacity to apply technical rules to the building process, and produce documents of technical specification of the procedures and constructive methods of buildings.**

Objectives

- Writing a report about Sustainable Construction that reflects all aspects of it.
- Properly presentation by means project planes.

Degree transversal competences

- **EPS3. Capacity to convey information, ideas, problems and solutions to both a specialized and no specialized public.**
- **EPS7. Capacity to work in situations with a lack of information and/or under pressure.**
- **EPS8. Capacity of planning and organizing the personal work.**
- **EPS9. Capacity for unidisciplinary and multidisciplinary teamwork.**
- **EPS13. Capacity to consider the socioeconomic context as well as the sustainability criteria in engineering solutions.**

Subject contents

CONTENTS

1.Introduction

- 1.1. Building sector
- 1.2. Definition of sustainability
- 1.3. Definition of bioconstruction
- 1.4. Definition of sustainable construction
- 1.5. key points in the sustainable construction

2.Materials

- 2.1. Introduction
- 2.2. Materials for the sustainable construction
- 2.3. Materials and life cycle for buildings
- 2.4. Eco-labels in the building sector
- 2.5. Life cycle analysis

3. Energy

- 3.1. Introduction
- 3.2. Passive systems
- 3.3. Energy efficiency
- 3.4. Renewable energies

4. Water

- 4.1. Introduction

4.2. Water treatment systems

4.3. Water saving systems

4.4. Water purifying systems

4.5. Water recovery systems

5. Wastes

5.1. Introduction

5.2. Wastes management

5.3. General concepts about special wastes

5.4. Wastes management in construction

5.5. Deconstruction

5.6. Special wastes

6. Health

6.1. Introduction

6.2. Sick building syndrome

6.3. Materials and products harmful for health

6.4. Illness

6.5. Good practices to create a healthy environment

Methodology

The methodology of the course will follow the next lines:

1.-Theoretical sessions where teachers expose theoretical contents

2.-Practical sessions where students are the main core of the learning process: students will work on group or individually.

Development plan

Week	Day	Content	Teacher
1	15 SET	Subject presentation	Gabriel Pérez/Julià Coma
	16 SET	Introduction	Gabriel Pérez
2	22 SET	Introduction	Gabriel Pérez
	23 SET	Introduction	Gabriel Pérez

3	30 SET	Materials	Gabriel Pérez
4	6 OCT	Materials	Gabriel Pérez
	7 OCT	Materials	Gabriel Pérez
5	13 OCT	Waste	Gabriel Pérez
	14 OCT	Waste	Gabriel Pérez
6	20 OCT	Waste	Gabriel Pérez
	21 OCT	Waste	Gabriel Pérez
7	27 OCT	Water	Gabriel Pérez
	28 OCT	Water	Gabriel Pérez
8	3 NOV	Health	Julià Coma
	4 NOV	Health	Julià Coma
9	10 NOV	1 st exam (theory and problems)	
10	17 NOV	1 st presentation of the project	Gabriel Pérez/Julià Coma
	18 NOV	Energy	Julià Coma
11	24 NOV	Energy	Julià Coma
	25 NOV	Energy	Julià Coma
12	1 DES	Energy	Julià Coma
	2 DES	Energy	Julià Coma
13			
	9 DES	Energy	Julià Coma
14	15 DES	Energy	Julià Coma
	16 DES	Energy	Julià Coma
15	22 DES	2 nd presentation of the project	Gabriel Pérez/Julià Coma
	13 JAN	2 nd exam (theory and problems)	Gabriel Pérez/Julià Coma
	2 FEB	Recovery (theory and problems)	Gabriel Pérez/Julià Coma

Evaluation

There will be two single written tests (50%):

- 1st exam: 20%
- 2nd exam: 30%

Group work (50%)

- Oral presentation at half project development 10%
- Oral presentation at the end of the project: 20%
- Final project: 20%

Bibliography

Recommended bibliography

- F. Javier Neila González, Arquitectura bioclimática: un entorno sostenible
- Bjorn Berge, The Ecology of Building Materials, 2000. ISBN: 978-0-7506-5450-0
- Diversos autors, Un vitruvio ecológico. Principios y práctica del proyecto arquitectónico sostenible, 1999. ISBN: 978-84-252-2155-2
- Albert Cuchí, Arquitectura i sostenibilitat, 2005. ISBN: 84-8301-839-X
- D. Anink, C. Boonstra, J. Mak, Handbook of sustainable building. An Environmental Preference Method for Selection of Materials for Use in Construction and Refurbishment, 1996. ISBN: 1-873936-38-9
- Calkings, Materials for Sustainable Sites, 2009. ISBN: 978-0-470-13455-9
- Ronald Rael, Earth Architecture, 2009. ISBN: 978-1-56898-767-5