



Universitat de Lleida

DEGREE CURRICULUM
SUSTAINABLE CONSTRUCTION
1

Coordination: PEREZ LUQUE, GABRIEL

Academic year 2016-17

Subject's general information

Subject name	SUSTAINABLE CONSTRUCTION 1			
Code	101431			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Typology	Modality
	Bachelor's Degree in Architectural Technology	4	OPTIONAL	Attendance-based
	Bachelor's Degree in Building Engineering	4	OPTIONAL	Attendance-based
	Bachelor's Degree in Mechanical Engineering	4	OPTIONAL	Attendance-based
ECTS credits	6			
Groups	1GG			
Theoretical credits	3			
Practical credits	3			
Coordination	PEREZ LUQUE, GABRIEL			
Department	INFORMATICA I ENGINYERIA INDUSTRIAL			
Teaching load distribution between lectures and independent student work	60 attended hours in class 90 hours of autonomous work			
Important information on data processing	Consult this link for more information.			
Language	English			
Office and hour of attention	Send an email in order to arrange a date			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CABEZA FABRA, LUISA FERNANDA	lcabeza@diei.udl.cat	1,1	CREA Building Office 0.32 Appointment by e-mail
COMA ARPON, JULIÀ	jcoma@diei.udl.cat	2,5	Tuesday between 16 and 17 hours CREA building Office 0.33
PEREZ LUQUE, GABRIEL	gperez@diei.udl.cat	3,6	Tuesday between 16 and 17 hours CREA building Office 0.12

Subject's extra information

Subject that requires continuous work throughout the semester in order to achieve the established goals. It is recommended to frequently visit the Virtual Campus of this subject because it announces all the information in it.

Learning objectives

- Search for information in foreign language.
- Writing a report about Sustainable Construction that reflects all aspects of it.
- Take into account all regulatory and environmental implications of materials and construction solutions used.
- Properly presentation by means project planes.

Competences

University of Lleida strategic competencies

- UdL2 Command of a foreign language.

Degree specific competences

- **GEE12. Manufactured or traditional constructive systems and materials knowledge, its varieties and physics and mechanical characteristics that define them.**
- **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.**
- **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.**
- **GEE21. Capacity to apply technical rules to the building process, and produce documents of technical specification of the procedures and constructive methods of buildings.**

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 grup or individually.

Development plan

Week	Day	Content	Teacher
1	13 SET	Subject presentation/workgroup presentation	Gabriel Pérez/Julià Coma/Luisa F Cabeza
	14 SET	Introduction	Gabriel Pérez
2	20 SET	Materials_A	Gabriel Pérez
	21 SET	Materials_B1	Gabriel Pérez
3	27 SET	Materials_B2	Gabriel Pérez
	28 SET	Materials_C (C2C)	Gabriel Pérez
4	4 OCT	Project review 1	Gabriel Pérez/Luisa F Cabeza
	5 OCT	Project review 1	Gabriel Pérez/Luisa F Cabeza
	11 OCT	Waste	Gabriel Pérez

5	12 OCT	Festivity El Pilar	
6	18 OCT	Waste	Gabriel Pérez
	19 OCT	Water	Gabriel Pérez
7	25 OCT	Water	Gabriel Pérez
	26 OCT	Health	Julià Coma
8	1 NOV	Festivity Tots Sants	
	2 NOV	Health	Julià Coma
9	7 NOV (18h)	1 st exam (theory and problems)	
10	15 NOV	Project review 2	Julià Coma/Luisa F Cabeza
	16 NOV	Project review 2	Julià Coma/Luisa F Cabeza
11	22 NOV	Energy	Julià Coma
	23 NOV	Energy	Julià Coma
12	29 NOV	Energy	Julià Coma
	30 NOV	Energy	Julià Coma
13	6 DES	Festivity Constitució	
	7 DES	Energy	Julià Coma
14	13 DES	Energy	Julià Coma
	14 DES	Technical talk	Gabriel Pérez/Julià Coma/Luisa F Cabeza
15	20 DES	Project presentation	Julià Coma/Luisa F Cabeza
	21 DES	Project presentation	Julià Coma/Luisa F Cabeza
Christmas			
	10 GEN (15h)	2 nd exam (theory and problems)	Gabriel Pérez/Julià Coma
	30 GEN (18h)	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%

During the 19th week it can be recover / improve the grade of the subject, following the guidelines of the Academic Degrees Framework of EPS, through a recovery test, which will have equal value and content to the theoretical contents (50%).

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