

## Course guide

### 290253 - LOW3LIV - Low3: Living Zero

**Last modified:** 25/07/2023

**Unit in charge:** Vallès School of Architecture  
**Teaching unit:** 753 - TA - Department of Architectural Technology.

**Degree:** DEGREE IN ARCHITECTURE STUDIES (Syllabus 2014). (Optional subject).

**Academic year:** 2023    **ECTS Credits:** 5.0    **Languages:** English

#### LECTURER

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**Coordinating lecturer:** Masseck, Torsten Andreas

**Others:**

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

EP2G. An aptitude for solving passive environmental conditioning, including thermal and acoustic insulation, climate control, energy performance and natural lighting (T).

EP19G. Adequate knowledge of ecology, sustainability and the principles of conservation of energy resources and environmental resources.

EP23G. Adequate knowledge of the foundations of vernacular architecture.

**Generical:**

CG5G. Knowledge of the physical problems, technologies and functions of buildings so as to provide them with comfortable indoor conditions and protection from climate factors.

CG7G. An understanding of the relationship between people and buildings, and between buildings and their environment, and the necessity of relating buildings to the spaces between them in view of needs and human scale.

**Transversal:**

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

CT1. ENTREPRENEURSHIP AND INNOVATION: To get knowledge on the processes scientific research is based on, as well as the methods used to transfer results among the several stakeholders involved in R+D.

CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: To understand the complexity of economic and social phenomena of welfare societies; to be able to relate wellbeing with globalization and sustainability; to achieve skills for a balanced and compatible use of technology, economy and sustainability.

CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

CT6G. EFFECTIVE USE OF INFORMATION RESOURCES. The ability to manage the acquisition, organisation, analysis and presentation of data and information in the field of specialisation and critically assess the results.

CT7. FOREIGN LANGUAGE. Knowledge of a foreign language, preferably English, at an oral and written level that is consistent with graduates' future needs.

**Basic:**

CB3G. Students must be able to collect and interpret relevant data (generally in their field of study) to make judgements that include reflection on relevant social, scientific and ethical topics.

CB4G. Students must be able to transmit information, ideas, problems and solutions to specialised and lay audiences.

## TEACHING METHODOLOGY

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The course explores a new mixed learning format, virtual and face-to-face, through combining the concept of a MOOC with sessions at the Living Lab LOW3.

The practical exercises of the course will be linked to the assessment and improvement of the environmental impact of housing and lifestyle of the participants and to the international Sustainable Lifestyles Accelerator project ([www.suslifespain.blogspot.com](http://www.suslifespain.blogspot.com)).

This semester the course will be extended to 5 ECTS, including a new project module "Green Office ETSAV" which consists in the collaboration in a project for the green transformation of the campus (Green Channel ETSAV: new green communication channel; or Green Campus ETSAV: projects of real transformation of spaces). Students will design and implement these projects in working groups during the semester, in parallel to online and in-person classes.

## LEARNING OBJECTIVES OF THE SUBJECT

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Transformative learning for a societal model and a personal lifestyle with less environmental impact is one of the main challenges of our time. Main objective of the course is to introduce into basic concepts of sustainability and to disseminate the generated knowledge of the LOW3 solar house prototype in the field of housing and a more sustainable lifestyle.

It is intended that the following skills be achieved through the course:

- Understand the concept and basic parameters of a more sustainable lifestyle and architecture through knowledge of energy parameters and environmental impact.
- Analyze and assess the potential of technologies such as solar thermal and photovoltaic systems, as well as gray water recycling, applied to homes.
- Acquire knowledge about sustainability indicators such as the ecological footprint, the carbon footprint, the environmental impact of materials or the energy amortization of solar technologies.
- Evaluate real data of the home itself, related to the concepts learned, such as resource consumption, bioclimatic behavior, and the potential for saving and generating energy.
- Participate in a campus green transformation project, applying the knowledge acquired.

## CONTENTS

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### Module 1: Sustainable Lifestyles

#### Description:

Biocapacity, ecological economy, consumption, resources

#### Full-or-part-time: 51h 10m

Theory classes: 25h

Practical classes: 25h

Self study : 1h 10m

### Module 2: Sustainable Housing Concepts

#### Description:

Habitability, comfort, flexibility, collective housing

#### Full-or-part-time: 5h

Theory classes: 2h 30m

Self study : 2h 30m

### Module 3: Photovoltaic Technologies

**Description:**

History, technologies, building integration, smart grids

**Full-or-part-time:** 5h

Theory classes: 2h 30m

Self study : 2h 30m

### Module 4: Solar Thermal Technologies

**Description:**

History, technologies, building integration, smart grids

**Full-or-part-time:** 6h

Theory classes: 3h

Self study : 3h

### Module 5: Materials

**Description:**

Lightweight buildings, wood construction, embodied energy, life cycle

**Full-or-part-time:** 6h

Theory classes: 3h

Self study : 3h

### Module 6: Water

**Description:**

Water as a resource, domestic consumption, storage and treatment

**Full-or-part-time:** 6h

Theory classes: 3h

Self study : 3h

### In-person sessions at Living Lab LOW3

**Description:**

Prototype exploration, presentations of exercises, debates and value discussion about course contents.

**Full-or-part-time:** 36h

Theory classes: 18h

Guided activities: 18h



### Project Module "GREEN OFFICE ETSAV"

**Description:**

Collaboration in a project for the green transformation of the campus (Green Channel ETSAV: new green communication channel; or Green Campus ETSAV: projects of real transformation of spaces). Students will design and implement these projects in working groups during the semester, in parallel to online and in-person classes.

**Full-or-part-time:** 54h

Laboratory classes: 18h

Guided activities: 18h

Self study : 18h

### Online back-up meetings

**Description:**

Clarification of exercises, online contents, and progress of projects

**Full-or-part-time:** 14h

Practical classes: 14h

## GRADING SYSTEM

1. Online self-evaluation exercises assure knowledge acquisition: 25%
2. Participation in debates about exercises and course contents, together with in-person sessions, foster collective learning and allow evaluating the acquired knowledge: 25%
3. Practical exercises of the learning modules include personal reflections of students and will be delivered together with a final exercise: 25%
4. Active participation in the action module "GREEN OFFICE ETSAV": 25%

## RESOURCES

**Other resources:**

MOOC promotion video: <http://www.youtube.com/watch?v=vCe37LAjwoo>

Blog Living Lab LOW3: <http://livinglab-low3.blogspot.com.es>

Blog Sustainable Lifestyles Accelerator: [www.suslifespain.blogspot.com](http://www.suslifespain.blogspot.com)

Bibliography indicated in each online learning module