

Course guides

220043 - 220043 - Greening the Built Environment

Last modified: 29/05/2020

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 758 - EPC - Department of Project and Construction Engineering.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2020 **ECTS Credits:** 3.0 **Languages:** English

LECTURER

Coordinating lecturer: MARTA GANGOLELLS SOLANELLAS

Others:

TEACHING METHODOLOGY

The course is divided into parts:

- Theory classes
- Practical classes
- Self-study for doing exercises and activities.

In the theory classes, teachers will introduce the theoretical basis of the concepts, methods and results and illustrate them with examples appropriate to facilitate their understanding.

In the practical classes (in the classroom), teachers guide students in applying theoretical concepts to solve problems, always using critical reasoning. We propose that students solve exercises in and outside the classroom, to promote contact and use the basic tools needed to solve problems.

Students, independently, need to work on the materials provided by teachers and the outcomes of the sessions of exercises/problems, in order to fix and assimilate the concepts.

The teachers provide the syllabus and monitoring of activities (by ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

The aim of this subject is to provide basic knowledge on the analysis of the energy consumption and energy saving measures in the built environment. The course will be mainly concerned with the limitation of buildings' energy demand and the energy performance certification of buildings. Energy saving measures applied to the built environment will also be described and discussed. Some real experiences on the integration of smart technologies (energy metering and sensor-actuator networks) in residential and tertiary buildings will be also described.

STUDY LOAD

Type	Hours	Percentage
Self study	45,0	60.00
Hours large group	30,0	40.00

Total learning time: 75 h



CONTENTS

Energy certification and energy saving measures applied to the built environment

Description:

Introduction to energy consumption in the built environment

Introduction to the legal framework related to the energy efficiency in buildings

Limitation of buildings' energy demand. Software LIDER.

Energy certification of buildings. Software CALENER.

Energy saving measures

Real experiences on the integration of smart technologies (energy metering and sensor-actuator networks) in residential and tertiary buildings.

Related activities:

Project developed in small groups related to an energy certification and proposal of energy performance improvements. Each group will choose the building object of analysis.

During some sessions, small exercises will be conducted in the class individually or in small groups and some others will be virtual.

Full-or-part-time: 75h

Theory classes: 30h

Self study : 45h

GRADING SYSTEM

The final grade depends on the following assessment criteria:

- Project (part 1), weight: 35 %
- Project (part 2), weight: 35 %
- Class activities, weight: 30 %

Non-satisfactory results in the project will be able to be redirected by improving the project individually after highlighting weak points. All the students have the right to improve the project. The improved project will have to be delivered the day scheduled by the school within the period of final exams. Marks in the improved project can range from 0 to 10. Only the best mark will be taken into account.