

## Course guide

# 220212 - 220212 - Architecture of Industrial Plants and Building Services

**Last modified:** 19/04/2023

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

**Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 5.0    **Languages:** Catalan, Spanish

## LECTURER

---

**Coordinating lecturer:** NURIA FORCADA MATHEU

**Others:** DAVID DOLCET BUTSEMS

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

---

### Specific:

1. Knowledge and skills to plan and design electrical and fluid, lighting, air conditioning and ventilation, energy saving and efficiency, acoustics, communications, home automation, intelligent buildings and facilities security.
2. Understanding and ability to apply the necessary legislation in the exercise of the profession of Industrial Engineering.
3. Plan, calculate and design products, processes, facilities and plants.

## TEACHING METHODOLOGY

---

The teaching methodology is divided into three parts:

- Lectures for content presentation
- Practical work in class (exercises and problems)
- Autonomous work to study and develop exercises and activities

During lectures, lecturers will introduce the theoretical foundations of the subject, concepts, methods and results illustrated with suitable examples to facilitate understanding.

During practical sessions, lecturers will guide the student in the use of theoretical concepts to problem solving, encouraging all the time critical thinking. Exercises to solve during the session and at home will be proposed to promote the use of the basic tools needed for problem solving.

Autonomously, students will process the material provided by lecturers and the problems of the practical sessions so as to assimilate and fix concepts. Lecturers will provide a learning plan and the monitoring of activities (ATENA).

## LEARNING OBJECTIVES OF THE SUBJECT

---

The course aims to give students skills to:

- perform verifications and control of facilities, processes and products
- design facilities considering its interaction with the building or the urban system
- design intelligent and energy efficient buildings
- make use of the knowledge about building and construction, facilities and complementary services, for industrial engineering projects.

## STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	12.00
Self study	80,0	64.00
Hours large group	30,0	24.00

**Total learning time:** 125 h

## CONTENTS

### Module 1

**Description:**

Module 1: Facilities Design and its interrelation with the Architecture and Building Construction

**Specific objectives:**

- Global Project of building facilities
- Energy supply in buildings
- Interrelation between facilities and the building architecture
- Interrelation between urban facilities and services
- Electrical and fluid systems in buildings and/or urban environments. Lighting systems. Acoustics
- Air conditioning and ventilation systems in buildings
- Communications systems. Automation systems and security installations. Fire protection facilities.

**Related activities:**

Exercises and exam.

**Full-or-part-time:** 106h

Theory classes: 12h

Practical classes: 24h

Self study : 70h

### Module 2

**Description:**

Module 2: Buildings and energy efficiency

**Specific objectives:**

- Intelligent buildings. Management and control systems in buildings and their facilities.
- Energy efficient buildings. Savings and energy efficiency in buildings and facilities
- Verification and control of facilities, processes and products.
- Verificació i control d'instal·lacions, processos i productes

**Related activities:**

Exam

**Full-or-part-time:** 19h

Theory classes: 3h

Practical classes: 6h

Self study : 10h



## GRADING SYSTEM

---

The final mark is divided into:

- Theory Midterm exam weight: 20 %
- Practicum Midterm exam weight: 20 %
- Theory Final exam weight: 20 %
- Practicum Final exam weight: 20 %
- Practicum weight: 20 %

Students with a grade less than 5 in the theory midterm exam will be able to do a resit exam the day of the final exam. The rating of the resit exam will be between 0 and 10. The highest mark will be the final mark.

## EXAMINATION RULES.

---

-