

# 1<sup>st</sup> year- 57 ECTS

## First Semester

Engineering Design I.C.  
12 ECTS

Machines and Sustainable  
Energy Systems 9 ECTS

Mathematical Models for  
Industrial Engineering 6 ECTS

Elective course 6 ECTS  
1<sup>st</sup> or 2<sup>nd</sup> semester

Experimental Fluid  
Mechanics

Numerical Analysis

## Second Semester

Mechanical Plants and  
Industrial Logistics 9 ECTS

Mechanics and Dynamics of  
Machines 9 ECTS

Electric Energy Conversion  
6 ECTS

Theory of Systems and  
Controls for Automation

Materials Chemistry



## 2<sup>nd</sup> year – 63 ECTS

### First semester

Advanced and Sustainable  
Manufacturing 6 ECTS

GUIDED CHOICES 18 ECTS



Sustainable Automation: Technologies and Controls for Industrial  
Automation I.C. & Mechanics of Robots and Automatic Machines

Sustainable Energy and Industry: Sustainable use of Energy I.C. &  
Sustainable Design of Industrial Plants

Sustainable Design and Manufacturing: Advanced Design Methods  
I.C. & Manufacturing Technologies for Composite Materials

Elective courses 12 ECTS  
1<sup>st</sup> or 2<sup>nd</sup> semester

### Second semester

Laboratory activities 12 ECTS

FINAL PROJECT 15 ECTS

It can be divided in activities  
in preparation of the final  
project abroad/internship



# Elective courses and lab activities

## First semester

Choose 2 courses among those (1<sup>st</sup> or 2<sup>nd</sup> semester) not included in year 1 and in the selected guided choice

- Electric Drives
- Engineering and Technology of Control Systems
- Mechanics of Robots and Automatic Machines
- Powertrains for Sustainable Mobility
- Energy and Pinch Point Analysis for Sustainable Energy Use
- Sustainable Design of Industrial Plants
- Structural FEM Modeling Applications
- Mechanical Design with Advanced Materials
- Manufacturing Technologies for Composite Materials
- Experimental Fluid Mechanics
- Numerical Analysis

## Second semester

- Theory of Systems and Controls for Automation
- Materials Chemistry
- Modeling and Control of Sustainable Powertrains
- Heating, Refrigeration and Thermal Storage

Choose one of the 12 ECTS lab activities;  
each lab is made up of two modules of 6 ECTS

- Sustainable Mobility Laboratory I.C.
- Condition Monitoring and Predictive Maintenance Laboratory I.C.
- Design and Virtual Prototyping of Automatic Machines Laboratory I.C.
- Sustainable Industry Laboratory I.C.
- Digital Engineering Laboratory I.C.

