Professional Master in Embedded Systems for IoT

UNIVERSITAT DE BARCELONA

Institut de Formació Contínua-IL3
UNIVERSITAT DE BARCELONA

Goal of the Master

- Acquire the necessary knowledge and skills in Embedded Systems to become a valuable and competitive professional for the of IoT market.

Who is it for?

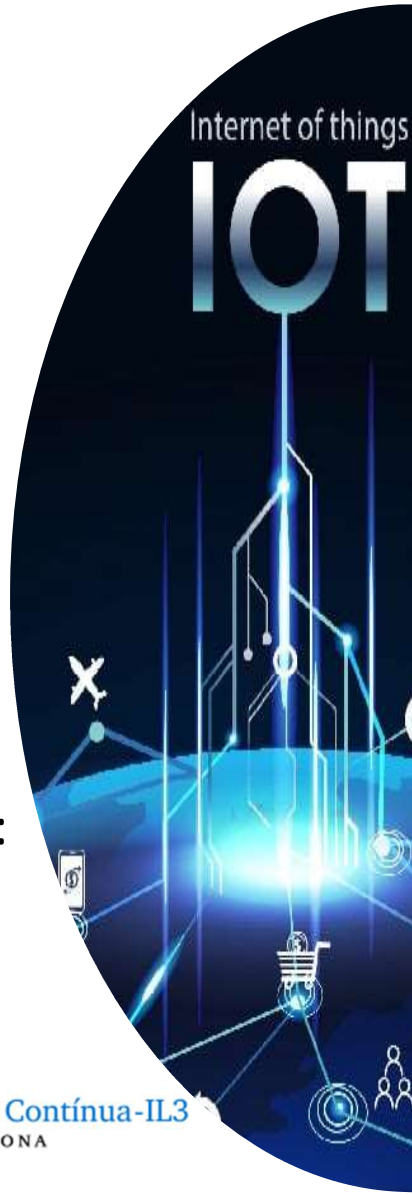
- Students finishing their bachelor of electrical, electronics or computer engineering. (students with other backgrounds subjects can of course also be welcome but should talk first with the Master's coordinator).
- Professionals who want to increase their skills in Embedded Systems
- Professionals in general interested in in-deep knowledge of the IoT world.

Characteristics of the Master

- 60 ECTS

- Subjects taught by:
  - Professors of the Department of Electronic and Biomedical Engineering
  - Professors of the Department of Mathematical and Computer Science
  - Recognized Professionals working at leading companies in the IoT sector.

- Possibility to carry out a 2nd Semester in two partner Universities:
  - Le Mans University (France)
  - Technical University of Braunschweig (Germany)



Master's structure

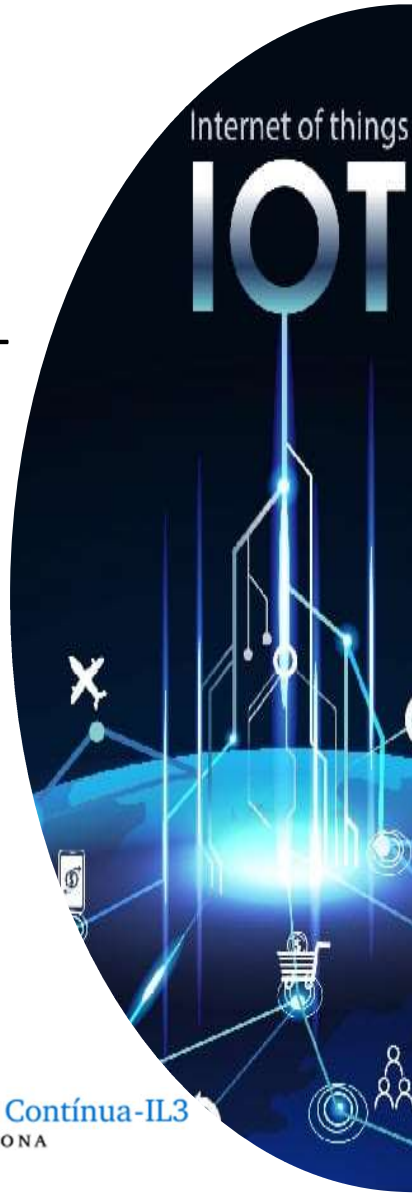
- Master divided in four blocs and two transversal subjects.

- Blocks:
  1. IoT Fundamentals
  2. IoT Peripherals and Systems
  3. IoT Software
  4. IoT Applications
- Transversal subjects:
  a. Innovation and Enterpreneurship
  b. Master Thesis (TFM)

IoT Fundamentals

- Provides the necessary knowledge to understand how an IoT devices can be **implemented with Embedded Systems** offering functionality and connectivity.

- It includes five subjects:
  1. **Architecture of Embedded Systems**
  2. **Power Management for Low Power Systems**
  3. **Wireless Communications**
  4. **Internet Communications for IoT**
  5. **Embedded Firmware**



IoT Peripherals and Systems

- Dives into the **hardware peripherals** that can be used to measure/monitor, process information, make decisions, run tasks and actuate/intervene in the environment where IoT devices are deployed.

- It includes four subjects:
  1. **Sensors and Interfaces for IoT**
  2. **Robotics and Actuators**
  3. **Integrated Design**
  4. **Operating Systems**

IoT Software

- Deepens into all the **software methods ant technologies** needed to program the behavior of IoT devices, as stand-alone decision-making nodes, but also specially as interconnected devices.

- It includes four subjects:
  1. **Cloud Computing**
  2. **Introduction to Machine Learning**
  3. **Advanced Machine Learning and Deep Learning**
  4. **Cybersecurity and cryptography**

IoT Applications

- Different **applications and case studies** are presented in this block, including the most relevant market and solutions at the Edge of technology.

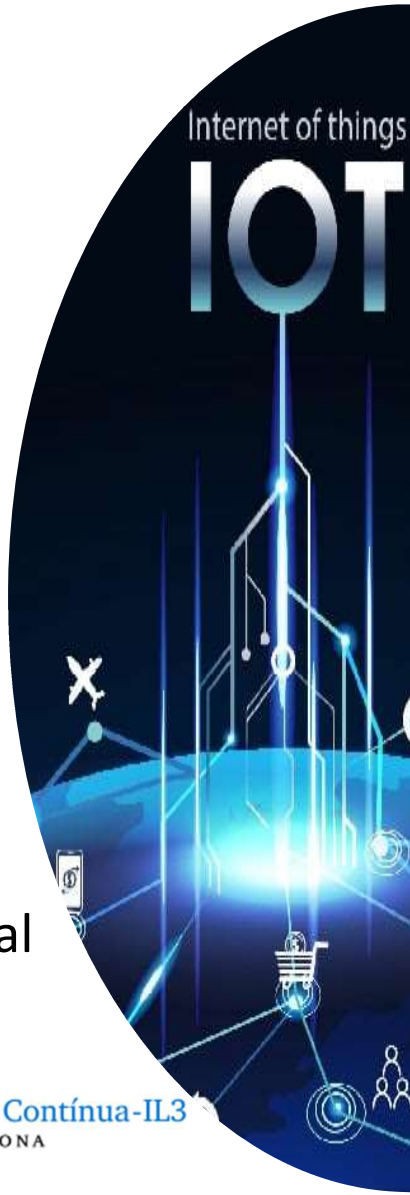
- It includes three subjects:
  1. **Smart Vehicles**
  2. **eHealth**
  3. **Smart cities and Industrial IoT**

Transversal Subjects

Additional subjects to integrate knowledge
and prepare for a competitive industrial environment:

- **Innovation and Enterpreneurship**, to train in value identification and to include innovation as a driving attitude of the engineering work in a company environment.

- **Master Thesis** (TFM), where the students can demonstrate the acquired knowledge and skills, developing a personal project, which can be done either in a partner company or an international partner universities.



Master's Important Characteristics

- Schedule: Monday – Friday from 15h to 20h
- Intensive learning: Three subjects per month,
  - 10 3ECTS subjects in the first semester.
  - 7 3ECTS subjects + **Final Master Project** (FMP) in the second semester
  - It is possible to finish the FMP once the Master year is over

FMP will be done whenever possible in one of our Partner Companies

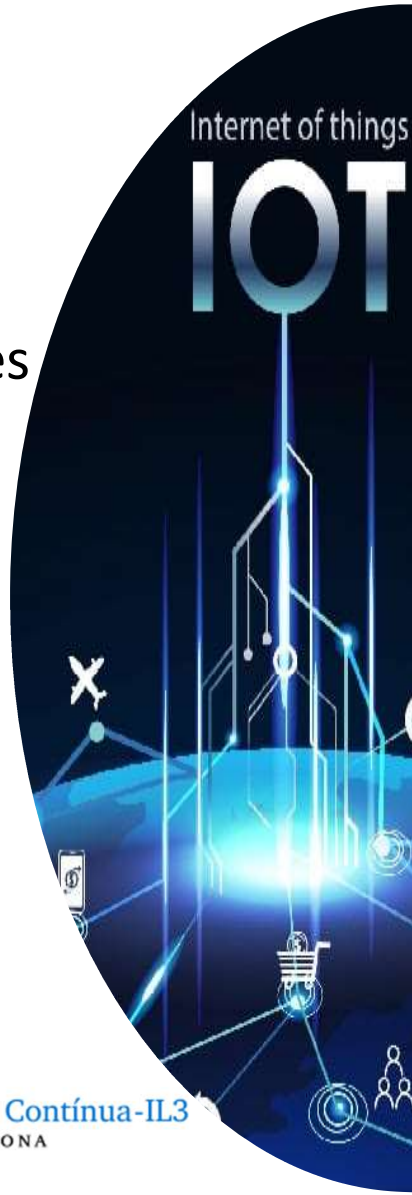
The International Vision

- Those students who are interested may take the second semester in one of our partner universities:
  - Le Mans University (France)
    https://www.univ-lemans.fr/en/index.html
  - Technische Universität Braunschweig (Germany)
    https://www.tu-braunschweig.de/en/

Both universities have a collaboration and internship agreement
With UB, with a broad number of subjects and opportunities beyond
This master, which allows you to perform a personalized semester to suit you

Final Advantages

- Possibility of doing the FMP in one of our partner universities collaborating with German or French companies
- Possibility of finishing your Master in one of our partner universities
- Networking opportunities



Master Schedule

- Important dates:
  - Registration at
    - Web: https://www.il3.ub.edu/ca/master-embedded-systems-for-internet-of-things
    - Contact person: admisiones@il3.ub.edu
    - Telefon de contacte: **93 309 36 54**
  - Starting date: 16 – 10 – 2023 Physics Faculty, UB
  - Ask Questions to:
    - Manel.lopez@ub.edu, admisiones@il3.ub.edu