

## Course guide

### 240428 - 240PE031 - Cybathlon M1

Last modified: 13/03/2025

**Unit in charge:** Barcelona School of Industrial Engineering  
**Teaching unit:** 723 - CS - Department of Computer Science.

**Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2014). (Optional subject).

**Academic year:** 2025    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish

#### LECTURER

**Coordinating lecturer:** Clos Costa, Daniel

**Others:** Manich Bou, Salvador  
Moreno Eguilaz, Juan Manuel

#### TEACHING METHODOLOGY

The subject is designed as project-based learning, in which students seek the necessary knowledge to carry out the assigned tasks. Self-directed learning and teamwork are encouraged.

It is conceived as an engineering project where the students have the challenge of designing and building a low-cost prosthetic hand in order to help people in need of assistive technology devices to overcome obstacles in their day-to-day life. The project is organized in different sections; mechanics, electronics, management, ... Each section establishes objectives and tasks that are distributed among the students. One of the objectives is to participate in the international Cybathlon competition, organized by ETH Zurich, which promotes assistive technology for people with functional diversity.

#### LEARNING OBJECTIVES OF THE SUBJECT

**Overall objective:**  
Acquire and put into practice the knowledge necessary to design and build a low-cost prosthetic hand.

**Specific objectives:**  
Learn how to plan, organize and develop the activities of a project. Acquire group work, responsibilities and leadership skills.  
Develop effective oral and written communication.  
Gain knowledge related to mechanical design, 3D printing, electronics and control.  
Contribute to the reduction of the gender gap in engineering in general and in mechanical design, in particular.  
Improve the motivation and academic success of students, through participation in school projects.  
Consolidate a more comprehensive engineering training, participating in multidisciplinary projects.

#### CONTENTS

##### Project planning

##### Description:

The students, with the advice of the reference teaching staff, will set the team's objectives and the associated tasks.

##### Full-or-part-time: 50h

Theory classes: 45h

Guided activities: 5h



### Task development

**Description:**

The students, with the help of the reference teachers, will develop the assigned tasks and validate the results in order to corroborate the proposed designs and be able to manufacture and build the prosthesis

**Full-or-part-time:** 50h

Guided activities: 5h

Self study : 45h

### Preparing and participating in competitions

**Description:**

The students will prepare and manage the participation in the decided competitions.

**Full-or-part-time:** 50h

Guided activities: 5h

Self study : 45h

## GRADING SYSTEM

An evaluation will be made based on the students' participation in the project. The final grade will take into account the development of the tasks associated with the project and the documentation generated.