

Academic Year/course: 2022/23

## 62943 - Advanced development of product

### Syllabus Information

**Academic Year:** 2022/23

**Subject:** 62943 - Advanced development of product

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 562 - Master's in Product Development Engineering

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as lectures, guided assignments, laboratory sessions, autonomous work, and tutorials.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

#### 4.2. Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (1 ECTS): 25 hours.
- Laboratory sessions (0.6 ECTS): 15 hours.
- Guided assignments (0.8 ECTS): 20 hours.
- Tutorials (0.2 ECTS): 5 hours.
- Theory study (0.8 ECTS): 20 hours.
- Practical work assignments (2.4 ECTS): 60 hours.
- Evaluation (0.2 ECTS): 5 hours.

Lectures: the professor will explain the theoretical contents of the course and solve illustrative applied problems. Although it is not a mandatory activity, regular attendance is highly recommended.

Laboratory sessions: Students will work together in groups actively doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods.

Guided assignments: students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures. They will be submitted at the beginning of every laboratory sessions to be discussed and analyzed. If assignments are submitted later, students will not be able to take the assessment test.

Autonomous work (study of theory and practical work assignments): students are expected to spend about 80 hours to study theory, solve problems, prepare lab sessions, and take exams.

Tutorials: the professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

### **4.3. Syllabus**

The course will address the following topics:

Topic 1. Design for Assembly. (DFA)

- Design and assembly: manual assembly and automated assembly
- Guidelines and methodologies
- Design for assembly with automatic systems and robots

Topic 2. Design for manufacture. (DFM)

- Design guidelines in different manufacturing processes
- Digital manufacturing applications for planning and optimization of manufacturing processes

Topic 3. Sustainable Design and Ecodesign

- Design criteria considering the recyclability and the end of product life
- Methods for assessing environmental impact and life-cycle assessment in the process
- Methodology for identification and assessment of sustainable aspects in the production process
- Criteria for selection of sustainable processes

### **4.4. Course planning and calendar**

The schedule of presential sessions, the information about the learning tasks, the dead-line of the reports and the schedule expositions of works will be defined at the beginning of the course and will be shown via moodle.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class.