

## 60930 - Radar, radionavegation and satellite systems

### Información del Plan Docente

<b>Academic Year</b>	2018/19
<b>Subject</b>	60930 - Radar, radionavegation and satellite systems
<b>Faculty / School</b>	110 - Escuela de Ingeniería y Arquitectura
<b>Degree</b>	533 - Master's Degree in Telecommunications Engineering
<b>ECTS</b>	5.0
<b>Year</b>	1
<b>Semester</b>	First semester
<b>Subject Type</b>	Compulsory
<b>Module</b>	---

### **1.General information**

#### **1.1.Aims of the course**

#### **1.2.Context and importance of this course in the degree**

#### **1.3.Recommendations to take this course**

### **2.Learning goals**

#### **2.1.Competences**

#### **2.2.Learning goals**

#### **2.3.Importance of learning goals**

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

#### **3.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **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. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving, laboratory sessions, group work, assignments, tutorials, and assessment.

#### **4.2.Learning tasks**

The course includes the following learning tasks:

- **Lectures** (38 hours). Teacher's presentation of the course contents.

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- **Practice sessions** (8 hours). Problem-solving is done individually or in groups.
- **Laboratory sessions.** 2 sessions of 2 hours each will be held in laboratory facilities.
- **Group assignments.** Each group of students, under the supervision of a teacher, will be assigned a case study related to radar systems.
- **Tutorials.**
- **Assessment.** A set of a final test, laboratory sessions and the group assignment.

### 4.3.Syllabus

The course will address the following topics:

- Topic 1. Introduction and required background
- Topic 2. Satellite communication systems
  - o Basics of Orbital Mechanics and Geodesic
  - o Satellite subsystems and spatial environment
  - o Channel and Link Calculation
  - o Communication techniques in satellite communication systems: physical layer and multiple access
- Topic 3. Radio Localization Systems
  - o Coordinate and projection systems in radio localization systems. Mathematical methods for positioning estimation
  - o Directional and hyperbolic Radionavigation systems: terrestrial systems
  - o GNSS systems
- Topic 4. Radar Systems
  - o Introduction to Radar systems.
  - o Basics of Radar: pulsed and continuous wave radar
  - o Environmental interference. CFAR systems
  - o Advanced techniques

### 4.4.Course planning and calendar

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 or please refer to the EINA website.

### 4.5.Bibliography and recommended resources