

## 60926 - Antenna design and wireless systems

### Syllabus Information

**Academic Year:** 2019/20

**Subject:** 60926 - Antenna design and wireless systems

**Faculty / School:** 110 -

**Degree:** 533 - Master's Degree in Telecommunications Engineering

**ECTS:** 5.0

**Year:** 1

**Semester:** Second semester

**Subject Type:** Compulsory

**Module:** ---

### 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. Teacher's presentation or explanation of theory in the classroom (with illustrative examples).

Practice sessions. Oriented approach to learning in which students address real problems in small groups under the teacher's supervision.

Laboratory sessions. Activities in special spaces with specialized equipment (laboratory, computer rooms).

Autonomous work. Preparation of seminars, lectures, research papers, reports, etc. To present or submit in classroom.

Assessment. A set of written, oral tests, practices, projects, assignments, etc.

Tutorials. Teacher's office hours to review and discuss the materials and topics presented in lectures.

#### 4.2.Learning tasks

The course includes the following learning tasks:

- **Lectures** (32 hours). in which the theoretical foundations of the contents of the subject are presented and where student participation is encouraged (the estimated autonomous work is 51.5 hours).

- **Practice sessions** (8 hours). Problem-solving and case studies.
- **Laboratory sessions** (10 hours). These are 5 sessions of 2 hours each. Students will use both software and specific equipment to consolidate the set of theoretical concepts developed throughout the lectures.
  - Contents: An antenna design portable terminals will be done using electromagnetic simulation programs. Special care will be applied in order to optimize certain response parameters taking into account the mobile propagation environments. The planning of a radiocommunication system will also be carried out using computer tools for this purpose.
  - Visits will be planned, as far as possible, to Research Institutes and/or Research Laboratories Companies related to course contents.
- **Group work** (17 hours). Supervised by the teacher and based on the course contents. Oral presentations in seminars.
- **Tutorials**. Individual or group attention to students.
- **Assessment**. A duration of 1 hour is estimated for the continuous assessment test and 3 hours for the final global examination.

### 4.3.Syllabus

The course will address the following topics:

- Topic 1. Propagation models.
- Topic 2. Diversity Systems.
- Topic 3. Mobile antenna systems.
- Topic 4. Antenna performance evaluation in mobile environment. Correlation characteristics of diversity.

### 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

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=60926&Identificador=4874>