

Academic Year/course: 2022/23

60960 - Antenna design and wireless systems

Syllabus Information

Academic Year: 2022/23

Subject: 60960 - Antenna design and wireless systems

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 623 - Master's Degree in Telecommunications Engineering

ECTS: 6.0

Year: 1

Semester: Second 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. 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** (40 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 60 hours).
- **Practice sessions** (10 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** (24 hours). Supervised by the teacher and based on the course contents. Oral presentations in seminars.
- **Tutorials**. Individual or group attention to students.
- **Assessment**. Two sessions of 1,5 hours for the continuous assessment is estimated and 3 hours for the final global examination if continuous assessment has not been passed.

4.3. Syllabus

The course will address the following topics:

- Topic 0. Course presentation.
- Topic 1. Propagation models.
- Topic 2. Selective Channels
- Topic 3. Diversity Systems.
- Topic 4. Mobile antenna systems. Array synthesis.
- Topic 5. Antenna performance evaluation in mobile environment. Correlation characteristics of diversity.
- Topic 6. Introduction to antennas for satellite systems.

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://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=60960>