

60940 - High-Frequency Engineering

Información del Plan Docente

Academic Year	2017/18
Subject	60940 - High-Frequency Engineering
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	533 - Master's Degree in Telecommunications Engineering
ECTS	2.5
Year	2
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.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.** The teacher explains the course contents with illustrative examples.

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- **Practice sessions.** Based Problem-based learning and assignments so that the students learn by means of real problems in small groups under the teacher's supervision.
- **Laboratory sessions.** Sessions in special spaces with specialized equipment (laboratory, computer rooms).
- **Assignments.** Preparation of seminars, lectures, research papers, reports, etc. to be presented or submitted in class.
- **Assessment.** A set of written and oral tests, assignments, projects, etc. used to assess the student's skills.
- **Tutorials.** Meetings to review and discuss the materials and topics presented in lectures.

5.2.Learning tasks

The course includes the following learning tasks:

- **Lectures and practice sessions** (7 hours). Sessions in which the course contents are covered and problems and practical cases are solved.
- **Laboratory sessions** (18 hours). Sessions of 2/3 hours conducted in small groups take place in the High Frequency Laboratory (L3.06).
- **Assignments.** Practical project supervised by the teacher and based on the course contents (device simulation, measurement and result analysis of a selected topic). Students will do an oral presentation too. The assessment criteria include: correctness, analysis, a conclusion summary, and presentation skills.
- **Individual tutorials.** Meetings are flexible and agreed between students and the professor.

5.3.Syllabus

The course will address the following topics:

- Topic 1. Course Introduction
- Topic 2. High Frequency and Microwave Antennas
- Topic 3. Microwave Passive Circuits
- Topic 4. Microwave Active Circuits

5.4.Course planning and calendar

As far as assessment is concerned, midterm written examination dates will be announced by the university and be carried out in two parts, at mid-course and at the end of the course. It will be announced in advance.

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.

5.5.Bibliography and recommended resources

- Balanis, Constantine A.. Antenna theory : analysis and design / Constantine A. Balanis . - 2nd ed. New York [etc.] : John Wiley, cop. 1997
- Rohde, Ulrich L.. RF/Microwave Circuits Design For Wireless Applications / Ulrich L. Rohde, David P. Newkirk John Wiley and Sons, 2004
- Haupt, Randy L.. Genetic Algorithms in Electromagnetics / Randy L. Haupt, Douglas H. Werner John Wiley and Sons,2007
- Electromagnetic Optimization by Genetic Algorithms / Yahya Rahmat-Samii (Editor), Eric Michielssen (Editor) John Wiley and Sons, 1999
- Numerical techniques for Microwave and Millimeter-Wave Passive Structures / T. Itoh John Wiley and Sons, 1989
- Uher, J.. Waveguide Components for Antenna Feed Systems: Theory and CAD / J. Uher, J. Bornemann, U. Rosenberg Artech House, 1993
- Colantonio, P.. High Efficiency RF and Microwave Solid State Power Amplifiers / P. Colantonio, F. Giannini, E. Limiti John Wiley and Sons, 2009
- Pedro, J.C.. Intemodulation Distortion in Microwave and Wireless Circuits / J. C. Pedro, N.B. Carvalho Artech House, 2003