

Academic Year/course: 2022/23

30384 - High Frequency: the Basics

Syllabus Information

Academic Year: 2022/23

Subject: 30384 - High Frequency: the Basics

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 581 - Bachelor's Degree in Telecommunications Technology and Services Engineering

ECTS: 6.0

Year: 4

Semester: First semester

Subject Type: Optional

Module:

1. General information

1.1. Aims of the course

The aim of this course is to provide the student with the technical knowledge and skills required to work in the microwave/millimeter engineering systems. In addition, the course aims to help to reach the following Sustainable Development Goals:

Goal 7: Clean energy.

Goal 8: Economic growth.

Goal 9: Industry and infrastructure.

Goal 11: Sustainability.

1.2. Context and importance of this course in the degree

This course is centered on the microwave systems for the telecommunication engineering.

1.3. Recommendations to take this course

To be able to follow this course, it is convenient that the student has previous knowledge of Electromagnetism and Waves, Radiation and propagation and Guided transmission.

It is required to participate in all programmed activities.

2. Learning goals

3. Assessment (1st and 2nd call)

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

The grading of this course is regulated by application of Article 9.4 of the Normative of Grading Assessment and can be achieved by obtaining a minimum of 5 in the weighted average of the following learning activities:

- Tutored activities (10%).
- Laboratory assignments (30%).
- Final exam (60%).

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The teaching /learning process is structured as follows:

1. Classroom lectures.
2. Problem solving sessions.
3. Project work previous to laboratory sessions.
4. Laboratory sessions.
5. Tutoring by appointment in given dates.
6. Assessment and evaluation exams.
7. Student homework.

4.2. Learning tasks

The program offered to the students to accomplish the desired objectives is organized in the following activities:

- Classroom lectures (46 hours).
- Problem-solving sessions (11.5 hours).
- Project work previous to laboratory sessions (12.5 hours)
- Laboratory sessions (10 hours).

4.3. Syllabus

- T1. Introduction.
- T2. Circuit theory for microwave waveguides.
- T3. Passive microwave circuits.
- T4. Resonators and microwave filters.
- T5. Diodes and microwave transistors.
- T6. Microwave amplifiers.
- T7. Microwave Optics.

Laboratory works:

1. Introduction to high frequency simulators.
2. Microwave matching networks design with lumped elements.
3. Microwave filter designs.
4. Microwave amplifiers.
5. Modeling and simulation of the laser diode.

4.4. Course planning and calendar

Classroom lectures, problem-solving and laboratory sessions will adopt the published official EINA calendar and schedule, both available online before the start of the course.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30384>