

Degree	Type	Year
Electronic Engineering for Telecommunication	OT	4

Contact

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Teachers

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

It is convenient to have studied the subjects "Transmitters and Receptor Electronics" and "RF and Microwave Engineering"

Objectives and Contextualisation

The overall objective of this subject is to provide the basic knowledge and techniques that allow the student to design circuits and passive communication components for specific applications through professional simulation tools. An special effort will be focused on the problems related to the practical implementation of communication components, such as non-ideals, lost due to different causes, generation of parasite modes, size, presence of spurious, etc.

Competences

- Communication
- Design, analyse and propose specialised radiofrequency and microwave components, devices, circuits and systems for telecommunication systems.
- Develop personal attitude.
- Develop personal work habits.

- Develop thinking habits.
- Work in a team.

Learning Outcomes

1. Communicate efficiently, orally and in writing, knowledge, results and skills, both professionally and to non-expert audiences.
2. Design communication circuits and components for specific applications using professional simulation tools.
3. Develop curiosity and creativity.
4. Develop systemic thinking.
5. Generate innovative and competitive proposals in professional activity.
6. Maintain a proactive and dynamic attitude with regard to one's own professional career, personal growth and continuing education. Have the will to overcome difficulties.
7. Make one's own decisions.
8. Manage information by critically incorporating the innovations of one's professional field, and analysing future trends.
9. Provide solutions to problems related to the practical implementation of communications components, such as interference, radiation loss, generation of parasitic modes, size, presence of spurious elements, etc.
10. Work cooperatively.
11. Work in complex or uncertain surroundings and with limited resources.

Content

Practical considerations for the design of communication circuits: losses, tolerances, radiation.

Design and characterization of passive microwave and millimeter filters. Designs based on resonators.

Specific software for the design of communication circuits: electric simulators versus electromagnetic simulators.

Circuit design with electromagnetic simulators. Optimization

Compaction techniques. Application examples: microwave filters, other microwave circuits.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Laboratory sessions	12	0.48	9, 2, 5, 7, 10
Master Classes	26	1.04	9, 2
Problems seminars	12	0.48	9, 4, 2, 10
Type: Supervised			
Tutorials outside of class hours.	7.5	0.3	9, 1, 2
Type: Autonomous			

Laboratory sessions preparation	12	0.48	9, 4, 2, 5, 7, 10
Solve problems at home	15	0.6	9, 2
Study at home	25	1	9, 4, 2

Directed activities:

Lectures: The professor will explain the topics using a projector and the blackboard.

Problem-solving seminars: The professor, or in some cases the students themselves, will work through example problems in small student groups.

Laboratory sessions: Prior to each lab session, the student must prepare the activity, and afterward must submit a report.

Note: The course teaching materials will be available on the UAB Virtual Campus.

Supervised activities:

Tutorials outside regular class hours.

Autonomous activities:

Independent study by the student.

Solving classroom problems in advance of the in-class work.

Preparation of laboratory sessions.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Delivery of Lab reports	25	15	0.6	9, 1, 4, 3, 2, 5, 8, 6, 7
1st work delivery	37.5	15	0.6	9, 1, 4, 3, 2, 5, 8, 6, 7
2nd work delivery	37.5	10.5	0.42	9, 4, 2, 7, 10, 11

The subject will be evaluated from the delivery of two works with a weight of 37.5% each and the results of the laboratory reports with a weight of 25%.

The works will be averaged between them and if the result of the average is higher than 4 will average with the practices of the subject to give rise to the final grade.

In the event of not passing the course, the project component can be retaken by resubmitting the failed assignments. To participate in the retake, one must have previously been assessed in activities that account for at least 2/3 of the final grade for the course.

If the course is not passed, the final grade will correspond to the grade obtained in the projects.

Failure to attend any of the practices or not having any note in the works will mean that the student will be declared as not evaluable.

Granting a grade of honor registration is the decision of the faculty responsible for the subject. The regulations of the UAB indicate that MH can only be granted to students who have obtained a final grade equal to or greater than 9.00. You can grant up to 5% of MH of the total number of students enrolled.

Without prejudice to other disciplinary measures deemed appropriate, the irregularities committed by the student that may lead to a variation of the grade of an evaluation act will be scored with a zero. Therefore, copying, plagiarism, cheating, letting copy, etc. in any of the evaluation activities will involve failing with a zero. The evaluation activities qualified in this way and by this procedure will not be recoverable. If it is necessary to pass any of these assessment activities to pass the subject, this subject will be failed directly, with no opportunity to recover it in the same course.

In case of repeating the subject, the same evaluation system as the rest of the students will be followed.

The Single Assessment System is not included in this course.

For this course, the use of Artificial Intelligence (AI) technologies is permitted exclusively for support tasks, such as bibliographic or information searches, text corrections, or translations. Students must clearly identify which parts have been generated using these technologies, specify the tools used, and include a critical reflection on how these have influenced the process and the final result of the activity. Lack of transparency regarding the use of AI in this assessed activity will be considered academic dishonesty and may result in partial or total penalties in the activity's grade, or more severe sanctions in serious cases.

Bibliography

- D.M. Pozar, Microwave Engineering, Addison Wesley.
- J.S. Hong, M.J. Lancaster, Microstrip filters for RF/Microwave Applications, John Wiley.

Software

In this subject, the ADS-Momentum software will be used in the lab sessions

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	321	Catalan	first semester	afternoon

(PLAB) Practical laboratories	321	Catalan	first semester	morning-mixed
(TE) Theory	321	Catalan	first semester	afternoon