

**Advanced Engineering Project**

Code: 102718  
ECTS Credits: 12

Degree	Type	Year	Semester
2500895 Electronic Engineering for Telecommunication	OT	4	0

**Contact**

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**Use of Languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

**Prerequisites**

To register the subject Advanced Engineering Project (PAE), It is necessary that the student meets (in general) the following requirements: To have approved all the credits of basic training subjects ( Calculus, Algebra, Statistics, Physics, Fundamentals of Computer Science, Fundamentals of Signals and Systems, Circuit Theory, Organization and Management of Companies and Fundamentals of Engineering), that suppose a total of 63 ECTS credits. Have approved at least 70% of the credits of compulsory subjects of the first three courses, which suppose a total of 73 ECTS credits. In total, the student must have passed  $63 + 73 = 136$  ECTS credits.

**Objectives and Contextualisation**

The objective of this course is to develop an advanced engineering project where the student can apply and integrate the knowledge and skills acquired throughout the Degree in Telecommunications Electronics Engineering. The project will be carried out in collaboration with a professor / researcher assigned to a research group, institute or research center that forms part of the UAB sphere.

**Competences**

- Communication
- Develop personal attitude.
- Develop personal work habits.
- Develop thinking habits.
- Draft, develop and sign projects in the field of telecommunications engineering designed to conceive, develop or exploit electronic systems
- Learn new methods and technologies, building on basic technological knowledge, to be able to adapt to new situations.
- Resolve problems with initiative and creativity. Make decisions. Communicate and transmit knowledge, skills and abilities, in awareness of the ethical and professional responsibilities involved in a telecommunications engineers work.
- Work in a team.

## Learning Outcomes

1. Apply the appropriate methodology to develop a problem, combining theoretical development and simulations as appropriate.
2. Communicate efficiently, orally and in writing, knowledge, results and skills, both professionally and to non-expert audiences.
3. Develop critical thinking and reasoning.
4. Develop curiosity and creativity.
5. Develop independent learning strategies.
6. Develop scientific thinking.
7. Develop systemic thinking.
8. Develop the capacity for analysis and synthesis.
9. Evaluate project results and compare them with similar results from external sources and identify new contributions by the project to current knowledge on the subject.
10. Evaluate the discrepancies between the objectives and the planning of a project, identify the causes of the discrepancies and adopt the necessary corrective measures.
11. Generate innovative and competitive proposals in professional activity.
12. Identify the specific objectives of the project
13. Maintain a proactive and dynamic attitude with regard to ones own professional career, personal growth and continuing education. Have the will to overcome difficulties.
14. Manage available time and resources. Work in an organised manner.
15. Manage information by critically incorporating the innovations of ones professional field, and analysing future trends.
16. Plan a project using a Gantt chart
17. Prevent and solve problems.
18. Search, tackle and expose different alternatives emphasizing their importance and risks in relation to project implementation.
19. Synthesize information obtained and ones own knowledge in a structured overview of the state of the art of the project matter.
20. Work autonomously.
21. Work cooperatively.

## Content

They will depend in each case, on the concrete project that is carried out.

## Methodology

Address and academic tutoring of the PAE All students who take the subject of PAE will be assigned a Tutor who will ensure that the project meets its academic objectives, and a Director who will be the will direct the student during the realization of the project. The tutor of the student will be responsible for the subject of PAE (which by default, will be the Coordinator of the degree), while the Director will be the person responsible for directing the work of the student in the research group, institute or research center correspondent. The duties of the Tutor are: To ensure, as the maximum academic responsible, for the quality of work and the fulfillment of the academic and teaching requirements of an advanced project in Electronics Engineering of Telecommunication. Apply the teaching guide of the subject of PAE. Participate in the evaluation of the tutored student. The duties of the Director and co-Directors are: Propose a job that meets the requirements Academics and teachers for an advanced project in Telecommunication Systems Engineering. Help the student to delimit the work to carry to term and establish realistic objectives, setting a timetable and an appropriate work rhythm. Advise and guide the student during the teaching period in which he has enrolled in the subject of PAE. This tracking s e will be carried out periodically through tutorial sessions, in order to guarantee that the established goals are achieved.

**Compatibilities** The subject of PAE may be enrolled by the student with the aim of expanding the dedication to the TFG. In this case: The director of the TFG must give his approval, depending on whether he considers that the proposed TFG it has sufficient entity to be carried out in an expanded manner. The TFG to develop must have a plan of specific work that contemplates a total equivalent dedication for the student of 24 ECTS credits. At the level of the student's academic record, these 24 ECTS credits will be recorded in accordance with the plan of studies, such as 12 ECTS credits of TFG plus 12 ECTS credits of PAE. In case the Director is a Professor of the School with assigned teaching the subject of TFG, the Director will also act as Tutor of the student.

**Incompatibilities** The subject of PAE is incompatible with the subject of External Practices, and therefore, the student can only enroll one of these two subjects.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Supervised			
Guidance	50	2	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20
Type: Autonomous			
Development of the Advanced Project	240	9.6	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20
Report writing	10	0.4	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20

## Assessment

The evaluation of the PAE will follow the same criteria as the evaluation of the TFG. The Tribunal of TFG will assess globally the work done by the student taking into account a reference dedication of 24 ECTS credits. The Court will issue a single qualification that will be recorded equally to the minutes of the subject of PAE and TFG. If the Director of the PAE is a professor of the School with teaching assigned to the subject of TFG, the Director will also act as Tutor of the PAE.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Evaluation of the Committee	40%	0	0	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20
Oral presentation and defense	20%	0	0	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20
Report of the work	20%	0	0	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20
report of the supervisor	20%	0	0	1, 9, 10, 18, 2, 6, 7, 5, 8, 4, 3, 11, 14, 15, 12, 13, 16, 17, 19, 21, 20

## Bibliography

In each case, the Project Director of the student will propose the appropriate bibliography based on the work to be done.