



IDENTIFYING DATA

Projects Lab

Subject	Projects Lab			
Code	V05G306V01427			
Study programme	Grado en Ingeniería de Tecnologías de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	12	Mandatory	4th	2nd
Teaching language	English			
Department				
Coordinator	Caeiro Rodríguez, Manuel			
Lecturers	Machado Domínguez, Fernando Marcos Acevedo, Jorge Nogueiras Meléndez, Andres Augusto			
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General description	Interdisciplinary projects must be addressed by a team of students who must represent at least two of the four technologies of the Telecommunication Technologies Engineering Degree. The teams are supervised by two faculty members from different Departments to enrich and facilitate the cross-fertilization between different areas of work. The work developed by the different teams will be defended at the end of the course as part of the evaluation process.			

The teaching language is Spanish, Galician or English.

English Friendly subject: International students may request from the teachers: a) materials and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.

Training and Learning Results

Code	
B1	CG1: The ability to write, develop and sign projects in the field of Telecommunication Engineering, according to the knowledge acquired as considered in section 5 of this Law, the conception and development or operation of networks, services and applications of Telecommunication and Electronics.
B4	CG4: The ability to solve problems with initiative, to make creative decisions and to communicate and transmit knowledge and skills, understanding the ethical and professional responsibility of the Technical Telecommunication Engineer activity.
B6	CG6: The aptitude to manage mandatory specifications, procedures and laws.
B7	CG7: The ability to analyze and assess the social and environmental impact of technical solutions.
B8	CG8: To know and apply basic elements of economics and human resources management, project organization and planning, as well as the legislation, regulation and standarization in Telecommunications.
B9	CG9: The ability to work in multidisciplinary groups in a Multilanguage environment and to communicate, in writing and orally, knowledge, procedures, results and ideas related with Telecommunications and Electronics.
B11	CG11 To approach a new problem considering first the essential and then the secondary aspects
B12	CG12 The development of discussion ability about technical subjects
C54	(CE54/PY1) The ability to elaborate the proposal of technical projects according to the specified requirements in a public competitive bidding.
C55	(CE55/PY2) The ability for technical direction of telecommunication project.
C56	(CE56/PY3) The ability to manage telecommunication project human resources and economic.
C57	(CE57/PY4) The ability to elaborate technical reports and for the follow up of a telecommunication project.
D1	CT1 Development of sufficient autonomy to carry out works within the area of Telecommunications in interdisciplinary contexts.
D2	CT2 Understanding Engineering within a framework of sustainable development.

D4 CT4 Encourage cooperative work, and skills like communication, organization, planning and acceptance of responsibility in a multilingual and multidisciplinary work environment, which promotes education for equality, peace and respect for fundamental rights.

Expected results from this subject			
Expected results from this subject	Training and Learning Results		
Learn to work in group in a medium term project.	B1	C54	D4
	B4	C56	
	B6	C57	
	B8		
	B9		
	B11		
Plan the development of a team project.	B12		
	B9	C55	D4
	B11	C56	
Integrate the required skills in a multidisciplinary team.		C57	
	B4	C56	D1
	B9		D4
Keep a dynamic attitude and foster an on-going improvement effort.	B12		
	B1		D1
	B4		D2
	B7		
	B9		

Contents

Topic	
Team work	The contents for each team will be specific of the project developed. In any case, they will be multidisciplinary contents.
Technical edition	Executive report Stages in report development
Project development	Introduction to project development methodologies such as, Design Thinking, Lean and Agile, where key principles are introduced: focus on the final user, rapid prototyping, to provide value to the client from the beginning, communication, etc.
Public presentations	Key elements in a presentation. Hints to perform an effective presentation. How to prepare a good presentation: - Strategy - Structure - Examples - Issues to take into account

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	2	0	2
Mentored work	4	4	8
Project based learning	14	244	258
Presentation	8	24	32

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Introductory activities	Some practical hints on skills such as oral and written presentation, and team working. This activity is individual. Competences D1, D2, D4 and D5 are developed here.
Mentored work	Partial review of the different projects evolution, with short presentations and discussions. This is a group activity. Competences B9, B11, B12 and D4 are developed here.
Project based learning	This is the core of the course: the team of students must address a project, either proposed by them or by two faculty members. During the duration of the course the team members must work in close cooperation to achieve the objectives of the project; the supervision is such that a weekly one hour meeting will take place with one or both advisors. It is recommended the creation of a web site, such as a wiki, blog or similar, for each team to document and show the works developed during the term. All members of the team must be able to defend its project at the end of the course in both oral and two public poster sessions. This is a group activity. Competences B1, B4, B6, B7, B8, C54, C55, C56 and C57 are developed here.

Presentation	Every team must defend its project in a final oral presentation and in two poster sessions, known as LPRO DAYS. The oral presentation can be made by one or more members of the team, and must include evidences to show proof of the work developed and achieved results. At the end of the presentation all members must be available for Q&A. The poster sessions require the presence of all members of the team. A summary of the work must be submitted to the evaluation committee three days in advance. This is a group activity. Competences B9, B12 and C5 are developed here.
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Personalized assistance

Methodologies	Description
Introductory activities	Subject teachers will be available during tutoring hours to solve any doubts and issues about theses activities. Teachers will establish timetables for this purpose at the beginning of the term and will be available at the e-learning platform https://moovi.uvigo.gal/ .
Project based learning	Each team will have the support of their tutors for the development of the project and to solve any doubts and issues about it in tutoring hours. Teachers will establish timetables for this purpose at the beginning of the term and will be available at the e-learning platform https://moovi.uvigo.gal/ .
Mentored work	Subject teachers will be available to solve any doubts and issues about the development of these tasks during tutoring hours. Teachers will establish timetables for this purpose at the beginning of the term and will be available at the e-learning platform https://moovi.uvigo.gal/ .

Assessment

	Description	Qualification	Training and Learning Results	
Mentored work	A portion of the final grade will be based on: 1. Advisors recommendations (15%). For an adequate tracking of the project development, advisors will request different pieces of evidence, both oral and/or written, including partial and/or final reports. Each pair of advisors must submit a justified recommendation to the committee as to the team work methodology and the performance of the team members in the accomplishment of the project goals. Although the grade is expected to be similar for the entire group as a general principle, exceptions might apply. Competences B9, B11 and B12 will be evaluated here. 2. Group mates (10%). Although the grade is expected to be similar for the entire group as a general principle, exceptions might apply. A peer review among the team members will be also requested as additional evidence for competences B9 y D4.	25	B9 B11 B12	D4
Project based learning	Advisors recommendations. For an adequate tracking of the project development, advisors will request different pieces of evidence, both oral and/or written, including partial and/or final reports. Each pair of advisors must submit a justified recommendation to the committee as to the team work methodology and the performance of the team members in the accomplishment of the project goals. Although the grade is expected to be similar for the entire group as a general principle, exceptions might apply. Competences B1, B4, B6, B7, B8, C54, C55, C56, C57 will be evaluated here.	40	B1 B4 B6 B7 B8	C54 C55 C56 C57
Presentation	A portion of the final grade will be based on the committee evaluation during the LPRO DAYS. The attendance to these days will be mandatory for all students. They must submit an executive summary of the project at least three days in advance to help assess their work. This part of the assessment will be made taking into account the summary of the project, the presentation, the poster and the work performed during the LPRO DAYS. The members of the evaluation committee will be the instructors of the Type-A ECTS, as long as they are not involved in the supervision of any project. Otherwise, additional assistance for the evaluation of those conflicting projects will be requested from other instructors from the course. Although the grade is expected to be similar for the entire group as a general principle, exceptions might apply. Thus, especially underperforming students not contributing to the team effort can get a different grade. Similarly, students contributing well above the average of the group can get a higher grade.	35	B1 B7 B9 B12	D2

Other comments on the Evaluation

The continuous assessment is carried out in accordance to the previously mentioned Presentation and Project based learning methodologies. It is mandatory the attendance to the 80% of the face to face sessions during the term, both in type-A and Type-C academic activities. Midterm presentations will be in Galician. Final presentations are allowed in Galician, Spanish or English. In any case, those students that decide to take the course in English should participate always in the English activities.

Those students/teams not getting the minimum grade to pass the course in the ordinary exam will have some additional weeks till the allocated date in the extraordinary exam and end-of-program exam to present the project again. In this case, the individual learner will need to show a comprehensive domain of the project developed by his/her team, together with sufficient additional contributions of his/her own.

Sources of information

Basic Bibliography

Eric Ries, **El método Lean Startup: Cómo crear empresas de éxito utilizando la Innovación Continua**, 1, Deusto, 2011

Ken Beck y colegas, **Manifiesto por el Desarrollo Ágil de Software**, 1, 2001

Complementary Bibliography

Jim Highsmith e Ken schwaber, **Lean Software Development. An Agile Toolkit**, 1, Addison Wesley, 2003

Recommendations

Other comments

This subject involves a high workload for the students outside of the classrooms related to the development of the projects: 300 hours. This effort is not just required individually, but also for the team as a joint group. In addition, it is important to have time availability to maintain meetings and perform group activities. Therefore, it is highly recommended to take this subject just with the subjects included in the second semester of the fourth year (DTEC and TFG) or equivalent. It is recommended to inform about subjects of other courses taken simultaneously with LPRO.

The work teams of this subject are multidisciplinary taking into account the 4 specializations of the degree. As a generic rule, if possible, teams cannot involve more than 3 students of the same specialization and students of 3 different specializations will be involved.
