Universida_{de}Vigo

IDENTIFYING DATA	
Projects Lab	
Subject	Projects Lab
Code	V05G300V01802
Study programme	Degree in Telecommunications Technologies Engineering

Descriptors	ECTS Credits		Choose	Year	Quadmester
	12		Mandatory	4th	2nd

Teaching language	Spanish Galician English
Department	
Coordinator	Caeiro Rodríguez, Manuel
Lecturers	Álvarez Sabucedo, Luis Modesto
	Caeiro Rodríguez, Manuel
	Cardenal López, Antonio José
	Costa Montenegro, Enrique
	Eguizábal Gándara, Luis Eduardo
	González Valdés, Borja
	López Nores, Martín
	Lorenzo Rodríguez, María Edita de
	Machado Domínguez, Fernando
	Martín Herrero, Julio
	Mikic Fonte, Fernando Ariel
	Pérez Estévez, Diego
	Poza González, Francisco
	Prol Rodríguez, Miguel
	Raña García, Herminio José
	Rodríguez Rodríguez, José Luis
	Sánchez Real, Francisco Javier
	Santos Gago, Juan Manuel
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General description	Interdisiciplinary 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.

Competencies	
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.

Learning outcomes

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

Contents

Topic	
Team work	The contents for each team will be specific of the project developed. In any case, they will be multidisciplinary contents. As an example, in the school web page is available the list of projects developed in previous years. See at http://teleco.uvigo.es/index.php/es/estudios/gett/planificacion-academica/lpro
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
Classroom work	4	4	8
Projects	14	244	258
Presentations / exhibitions	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. Competences CT1, CT2 and CT4 are developed here.
Classroom work	Partial review of the different projects evolution, with short presentations and discussions. Competences CG9, CG11 and CG12 are developed here.
Projects	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 willl 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. Competences CG1, CG4, CG6, CG7, CG8, CG9, CG11, CG12, CE54, CE55, CE56 and CE57 are developed here.
Presentations / exhibitions	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. Competences CG9 and CG12 are developed here.

Personalized attention

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.
Projects	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.
Classroom 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.

Assessment

	Description	Qualification	Training and Learning Results	
Projects	A portion of the final grade will be based on: 1. 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. Competences CG1, CG4, CG6, CG7, CG8, CG11, CG12, CE54, CE55, CE56, CE57 will be evaluated here. 2. Group mates. A peer review among the team members will be also requested as additional evidence for competences CG9, CT1, CT4.	65	B1 B4 B6 B7 B8 B9 B11 B12 C54 C55 C56 C57	D1 D4
Presentations / exhibitions	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

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.

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 teams not getting the minimum grade to pass the course will have some additional weeks till the allocated date in the second call to present their work again. If the performance of a given student is graded differently from his/her team-mates, and this leads to failing the course, then he/she will need to show a comprehensive domain of the project developed by his/her team in the second call, 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

Subjects that are recommended to be taken simultaneously
Technology Management/V05G300V01801

Other comments
This subject involves a high workload for the students outside of the classrooms related to the development of the projects: 244 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.