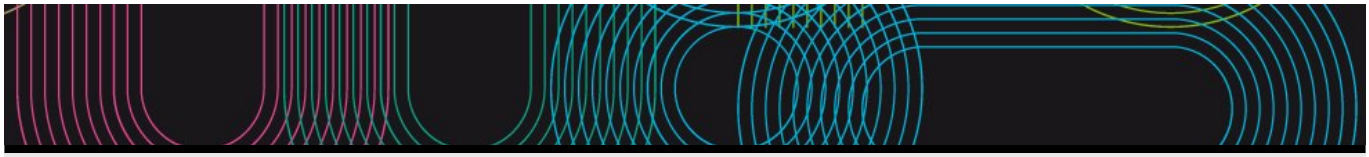

IDENTIFYING DATA				
(*)A Enxeñaría de Telecomunicación na Sociedade da Información				
Subject	(*)A Enxeñaría de Telecomunicación na Sociedade da Información			
Code	V05M145V01101			
Study programme	(*)Máster Universitario en Enxeñaría de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Mandatory	1st	1st
Teaching language	Spanish			
Department				
Coordinator	Cuiñas Gómez, Íñigo			
Lecturers	Caeiro Rodríguez, Manuel Cuiñas Gómez, Íñigo Fernández Iglesias, Manuel José Mariño Espiñeira, Perfecto			
E-mail	inhigo@uvigo.es			
Web	http://faitic.uvigo.es			
General description	This subject looks for taking the students out of the most technical concepts of Telecommunication Engineering and centering them in the society in which they live: it pretends that they take consciousness that the activity of the engineer is not an isolated fact but it transforms the world (at small and at large scale). This leads to two fundamental ideas: 1) The society, people that conform it, have problems that can be resolved by the engineers: the function of the Engineering is to resolve or mitigate problems of the society in which it frames , not to create them. Knowing how it has resolved situations in the past can help to face problems in the future (history oriented to future action, no to the contemplation of the past). 2) The engineering activities have direct influence in the own society, in how people live or in how they relate. In fact, the big changes of the last decades have been starred directly by contributions of the field of the Engineering of Telecommunication. This influence has to go accompanied of taking of consciousness of the ethical responsibility.			

Competencies	
Code	
A3	CB3 Students must integrate knowledge and handle complexity of formulating judgments based on information that was incomplete or limited, including reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.
A12	CG7 The capacity for implementation and management of manufacturing processes of electronic and telecommunications equipment; guaranteeing safety for persons and property, the final quality of the products, and their homologation.
A14	CG9 The ability to understand the responsibility and professional ethics of the activity of the profession of Telecommunications Engineering.
A18	CG13 The knowledge, understanding and ability to implement the necessary legislation in the exercise of the profession of Telecommunications Engineering.
A33	CE15 The ability to integrate technologies and systems of Telecommunication Engineering, with general character, and at broader and multidisciplinary contexts such as bioengineering, photovoltaic conversion, nanotechnology, telemedicine.
B3	CT3 Understanding Engineering in a framework for sustainable development.
B4	CT4 Awareness of the need for training and continuous quality improvement, developing values of the dynamics of scientific thought, showing a flexible, open and ethical attitude in front of different opinions or situations, particularly on non-discrimination based on sex, race or religion, respect for fundamental rights, accessibility, etc.

Learning aims		
Expected results from this subject	Typology	Training and Learning Results
Knowledge of what the profession of Telecommunicationis Engineering is and what represents.	know	A12 A18 B4
Taking of consciousness of the social responsibility, ethical and environmental of Telecommunication Engineering.	Know be	A3 A14 B3 B4
Contact with other disciplines in which the technologies of Telecommunication integrate for the development of the society: bioengineering, solar energy, nanotechnologies, tele-medicine, teleasistance, teleeducation.	Know How	A33

Contents	
Topic	
Seminar on the Engineering in the Society	Engineers (to be possible former students at the School) speak us on their professional activity, or advise us on appearances of professional development (EuroPass, etc.). At the end, the students answer poll/questionnaires to move them to think on the topics. The answers will be used for debates in another session. Related competencies: CE15 and CT4
Debates on the seminar	From the answers of their poll/questionnaires, debates of half hour treating to look for the ethical implications or the influence that the described engineering activity has on the society. Related competencies: CB3
Professional attributions and their history	Eight historical professional attributions . Historical development of systems or applications related: * Television * Wire communications (small history: Vigo and the football in Spain) * Radioelectric spectrum (management: attributions, etc.) * Internet * Mobile telephony (including effects on health) * Experts official reports. Related competencies: CG13 and CT3
Ethical implications of the Engineering	Three cases, extracted from the actuality and related with engineering activities with influence in the society. In previous classes or in FaiTIC, lecturers provide information of the cases and can distribute roles (commissions to students or to groups that defend a determinate posture or opinion). Presentation of the case and debate in sessions of two hours by case. Related competencies: CG9
In a multidisciplinary society	The proposal for the work in groups C is centered in the resolution of problems or situations of the society in which we live, no strictly related with the Telecommunication Engineering, so that the students comprise his implication in multiple fields of the society and how can influence in her with solutions posed from his competencies and engineering skills. It does not treat to manufacture or program a solution, but to look for a proposal that was feasible, now or in a future with technology more developed, and that it was acceptable socially. The process would be based in techniques of Design Thinking. In group A, presentations of the solutions that the groups C find to the problems. Related competencies: CG7, CE15, CT3 and CT4

Planning			
	Class hours	Hours outside the classroom	Total hours
Seminars	23	10	33
Projects	5	70	75
Master Session	10	5	15
Long answer tests and development	2	0	2

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

Methodologies	
	Description
Seminars	Teaching in seminar format, in which the student participates very actively in the evolution of the classes deepening in a specific subject, expanding it and relating it with contents oriented to the professional practice; including the participation in scientific events and/or informative, organised or no in the own School; the organisation of debates that allow sharing ideas and proposals, guided by lecturers, both face-to-face or on-line; and the study of cases/analysis of situations (analysis of a problem or real case, with the purpose to know it, interpret it, resolve it, generate hypothesis, diagnose it and going deep in alternative procedures of solution, to see the application of the theoretical concepts in the reality). These activities can have related a load of autonomous work of the student. Competencies worked: with this methodology we work the competencies CB3, CG7, CG9, CG13 and CT4
Projects	Realisation of works, individual or in group, for the resolution of a case or a concrete project, as well as the presentation of the results by writing and/or by means of a presentation that can follow different formats: oral, poster, multimedia. They include the integrated Methodologies: learning based in problems (LBP), resolution of problems of design proposed by the professor, and education based in projects of learning (PBL). The student, in group, prepares a work providing a solution to a clear-cut problem according to the methodology Design Thinking, identifying situations of the daily life that a priori do not relate with the Telecommunication. For this will split of a research of news on a subject that propose to each group, of actuality, (for example location of missing aeroplanes in the sea, integration vs. exclusion of communities in risk of vulnerability -elderly, third world, rural-, etc.), will pose imaginative solutions and will treat to arrive to a proposal that was reasonable, although it can not being still *implantable given the current technological development. The groups will begin for locating real news related. From them, they will treat to identify possible technological or procedural solutions . They will have to look for technical and scientific information on these and, finally, elaborate a report and a presentation. The result of this activity will be documented through a service on line type forum or wiki. Also it will produce a document of presentation or video that was used in the final presentation of the work developed to the class. Both results will be evaluated based on previously known rubrics. The interaction with the lecturers will be face-to-face with five meetings of one hour, and through forums during the research of information, and by email for the exchange of ideas. Competencies worked: with this methodology work the competencies CB3, CE15/GT1, CG9 and CT4
Master Session	Explanation of the contents of the subject; it includes explanation of concepts; introduction of practices and exercises; and resolution of problems and/or exercises in ordinary classroom. Competencies worked: with this methodology work the competencies CG7, CG9 and CT3

Personalized attention	
Methodologies	**Description**
Master Session	Meeting activity between lecturer and student in which they debate and resolve questions or doubts related with the contents of the matter and with the competitions associated. It can be face-to-face or on line.
Seminars	Meeting activity between lecturer and student in which they debate and resolve questions or doubts related with the contents of the matter and with the competitions associated. It can be face-to-face or on line.
Projects	Meeting activity between lecturer and student in which they debate and resolve questions or doubts related with the contents of the matter and with the competitions associated. It can be face-to-face or on line.
Tests	**Description**
Long answer tests and development	Meeting activity between lecturer and student in which they debate and resolve questions or doubts related with the contents of the matter and with the competitions associated. It can be face-to-face or on line.

Assessment		
	Description	Qualification

Seminars	Systematic observation: In the seminars we will value the participation in the debates (with the speakers of the seminar Engineering in the Society;, between the students in the sessions of debate in classroom, and in the argumentation in ;Ethical implications of the Engineering). It will be able to support the evaluation in proofs of short answer. In these observations we will evaluate the competencies CB3, CG7, CG9, CG13 and CT4	30
Projects	The realisation of the works in groups will be evaluated in two parts: the own dynamics of the works and the presentations. The student will receive 15% of the note by the own work; evaluated to 50% by the lecturer that directs the work and by the group of professors of the matter. Related to the presentation, the student will receive another 15%, evaluated by his/her mates (evaluation by pairs) according to a rubric that will be approved before the beginning of the works. With these works we will evaluate the competencies CB3, CE15/GT1, CG9 and CT4	30
Master Session	Short answer tests: there will be 4 proofs, of 5-10 minutes length, that will liberate contents of the previous subjects. In these short proofs we will evaluate the competencies CG7, CG9 and CT3	40
Long answer tests and development	The final examination, in case it would be needed, will consist of questions of development, in which the student will have to show the purchased knowledge, initiative to propose solutions to problems no necessarily of telecommunication, and he/she will also have to expose his opinion on conflicts of professional ethics, showing his capacity to provide opinions on situations that involve to the society.	0

Other comments on the Evaluation

The continuous assessment tests allow students to obtain a final grade based solely on their path along the course, and consist of:

One. 4 short-answer tests, with 10% of the total grade each, totaling 40%.

Two. Systematic observation in the seminars, which account for 30%.

Three. Evaluation of supervised work (15%) and the presentation of them (15%).

Continuous assessment tasks are not recoverable, and they are only valid for the current year. A student is assumed to have opted for continuous assessment when he/she has been made two of the short-answer tests and has participated in two debate activities. A student who chooses to continuous assessment is deemed to have been presented to the subject, whether they are present or not to the final exam.

If a student, having submitted to continuous assessment, chooses the final exam, the final grade for the course will be the average of the two.

Under the regulations of the University of Vigo, the student who wishes may choose 100% of the final grade by a single final exam. The final exam is one that is done in the official dates marked on School Board in the months of December or January (or July in the case of special consideration), and who are obliged to attend those students who have not opted for continuous assessment and want to pass the subject. The final exam will consist of a development test, as described in the evaluation section.

The resit exam will have a similar structure to the final exam.

Sources of information

C. Rico, **Crónicas y testimonios de las Telecomunicaciones españolas**, COIT-AEIT,

O. Pérez Sanjuán, **De las señales de humo a la Sociedad del Conocimiento**, COIT-AEIT,

O. Pérez Sanjuán, **Detrás de la cámara**, COIT-AEIT,

VV.AA., **Design Thinking for Educators**, www.designthinkingforeducators.com/toolkit/,

J. Cabanelas, **Vía Vigo: el Cable Inglés el Cable Alemán**, Instituto de Estudios Vigueses,

Recommendations

Subjects that continue the syllabus

(*)Dirección de Proxectos de Telecomunicación/V05M145V01201