IDENTIFYING DATA

Internet Services

Subject	Internet Services
Code	V05G306V01301
Study programme	Bachelor Degree in Telecommunication Technologies Engineering (BTTE)

Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	1st

Teaching language	English
Department	
Coordinator	Gil Solla, Alberto Burguillo Rial, Juan Carlos
Lecturers	Burguillo Rial, Juan Carlos Gil Solla, Alberto Mouriño García, Marcos Antonio
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General description	This subject will provide to the student a global vision of the group of current services of Internet like DNS, email, the WWW, the Web Services, the sharing of resources among peers (P2P), the Semantic Web and the Cloud Computing. Besides, the student will be introduced in the most frequent technologies to develop such services and web applications.

Training and Learning Results

Code	
B3	CG3: The knowledge of basic subjects and technologies that enables the student to learn new methods and technologies, as well as to give him great versatility to confront and adapt to new situations
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.
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.
C11	CE11/T6: The ability to conceive, deploy, organize and manage networks, systems, services and Telecommunication infrastructures in residential (home, city, digital communities), business and institutional environments, being responsible for launching of projects and continuous improvement like knowing their social and economical impact.
C18	CE18/T13: The ability to differentiate the concepts of access and transport networks, packet and circuit switched networks, mobile and fixed networks, as well as distributed newtwork application and systems, voice, data, video, audio, interactive and multimedia services.
D2	CT2 Understanding Engineering within a framework of sustainable development.
D3	CT3 Awareness of the need for long-life training and continuous quality improvement, showing a flexible, open and ethical attitude toward different opinions and situations, particularly on non-discrimination based on sex, race or religion, as well as respect for fundamental rights, accessibility, etc.
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		
To know the basic services of Internet, as well as comprise the basic principles of his operation.	B3 B6	C11 C18	D2 D3 D4

To dominate the main technical standards in the field of development of telematic services.	B6	C11 C18	
To understand the importance of organising the structured information for his suitable utilisation.	B3 B4	C11 C18	D2
To Know the basic concepts of semantic management of the information.		C11	D2
To understand the principles and the general organisation of a web service.	B9	C11 C18	
To improve the skill in the design and development of basic telematic services.	B4 B9		D2 D3 D4

Contents

Topic	
Internet basic services	- DNS - Electronic mail - World Wide Web: architecture, languages, protocols.
Information structure	- HTML - CSS - XML introduction - NameSpaces, - Document Object Model (DOM) - JSON - XML Schema
Server-side development technologies	- CGI, DSO modules - PHP - Servlets - JSP - XPath, XSLT
Client-side development technologies	- JavaScript - jQuery - Ajax, SSE - WebSockets
Additional services	- RESTful API. Microservices model - Sharing resources among peers (P2P) - Metadata - Cloud Computing

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	2	0	2
Lecturing	24	24	48
Practices through ICT	26	40	66
Discussion Forum	0	4	4
Self-assessment	0	2	2
Essay questions exam	2	10	12
Essay questions exam	2	10	12
Problem and/or exercise solving	1	1	2
Problem and/or exercise solving	1	1	2

*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	In the first classes we will describe the activities to be performed along the subject, along the theory and along the practices.
Lecturing	Along the theory classes we will describe the main contents of the subject by means of slides. Theory classes will promote the competences: CT2, CT3 y CT4. Besides, the exam for this part evaluates the competencies: CG3, CG4, CG6, CE11, CE18.
Practices through ICT	The subject also will require the development and delivery of 3 practices that the students will perform individually. The applications to develop in these practices will be done by means of the languages common used in the Internet: Javascript, PHP, Java, etc. These practices evaluate the competences: CG3, CG4, CG6, CG9, CE11, CE18 and promote the competences CT2, CT3 y CT4.

Discussion Forum	During the course we will discuss several topics, related with the concepts seen in theory, in the forums of the subject.
	This forum will promote the competences: CG3, CG6, CT2, CT3 and CT4.

Personalized assistance

Methodologies	Description
Discussion Forum	In the practical formative activities and tutoring, the professors of the subject will offer personal guidance to each student in the tasks to be performed, with the aim to orient the approach and the methodology. Also they will offer coordination information with other contents and subjects of the study program. It is recommended to consult the doubts with the teachers along the course in order to improve the understanding of the basic concepts, and for performing the tasks and activities to be evaluated. The students will be able to query and request tutoring through MOOVI platform (https://moovi.uvigo.gal).
Practices through ICT	In the practical formative activities and tutoring, the professors of the subject will offer personal guidance to each student in the tasks to be performed, with the aim to orient the approach and the methodology. Also they will offer coordination information with other contents and subjects of the study program. It is recommended to consult the doubts with the teachers along the course in order to improve the understanding of the basic concepts, and for performing the tasks and activities to be evaluated. The students will be able to query and request tutoring through MOOVI platform (https://moovi.uvigo.gal).

Tests	Description
Essay questions exam	In the practical formative activities and tutoring, the professors of the subject will offer personal guidance to each student in the tasks to be performed, with the aim to orient the approach and the methodology. Also they will offer coordination information with other contents and subjects of the study program. It is recommended to consult the doubts with the teachers along the course in order to improve the understanding of the basic concepts, and for performing the tasks and activities to be evaluated. The students will be able to query and request tutoring through MOOVI platform (https://moovi.uvigo.gal).
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Assessment

	Description	Qualification	Training and Learning Results		
Self-assessment	They will do two test of self-evaluation along the subject on the theoretical concepts that the students have learnt up to such point.	0	B3 B4 B6	C11 C18	
Essay questions exam	There will be a theoretical exam in the half of the course about the contents seen so far. It will be composed of short questions and/or of selection of multiple option, and of questions of development where the student will describe one or several concepts, relating them between yes, and illustrating them with examples.	25	B3 B4 B6 B9	C11 C18	D2 D3 D4

Essay questions exam	There will be a theoretical exam at the end of the course about the contents of the second part. It will be composed of short questions and/or of selection of multiple option, and of questions of development where the student will describe one or several concepts, relating them between yes, and illustrating them with examples.	25	B3 C11 D2 B4 C18 D3 B6 D4 B9	
Problem and/or exercise solving	The code of the practices will be evaluated by the teachers to check that it works according to the requirements and specifications. In addition, the student must pass a practical test (related to the proposed practices) to verify that he adequately masters his code.	25	B3 C11 D2 B4 C18 D3 B6	
Problem and/or exercise solving	The code of the practices will be evaluated by the teachers to check that it works according to the requirements and specifications. In addition, the student must pass a practical test (related to the proposed practices) to verify that he adequately masters his code.	25	B3 C11 D2 B4 C18 D3 B6	

Other comments on the Evaluation

The subject consists of a theoretical part and a practical part. Each of them will be valued with 5 points, having to get at least 2.5 in each part to pass the subject.

Following the guidelines of the degree, students who take this subject will be offered two evaluation systems: continuous evaluation (EC) and global evaluation (EG).

EC:

- The student body follows the EC by default, but may renounce it at any time.

- The theoretical part is graded with 5 points and consists of two exams (E1 and E2), the first will be held during the semester and the second during the official exam period (2.5 points each). Both E1 and E2 are made up of two parts of equal weight (1.25 points). For both E1 and E2, if part 1 is failed, part 2 will not be corrected and the exam grade will be exactly the grade for that first part. If part 1 is passed, then the grade for that exam will be 1.25 + the grade for part 2.

A minimum of 1 point will be required in each of the two theory exams to average with the other in order to pass the theoretical part. In addition, the result of said average must reach 2.5 points.

Additionally, students who follow the CE may receive up to 1 extra point based on activities carried out in class and/or on the MOOVI platform. Half of that extra grade will be added to the theory grade in any case. The other half, only in case of having approved the theoretical part without the need for the previous extra note. Finally, the grade for the theory part will be adjusted to 5 if the result is higher.

- The practical part is graded with 5 points and consists of several practices and a practical exam.

- Practice 1 is worth 0.5 points, it can be delivered at any time throughout the month of October. The students must correct the errors found, at which time they will obtain the indicated grade.

- Practice 2 will be worth 2 points and can be delivered up to a few days before the practical exam (the exact date will be notified at the time). After the delivery, the students must correct the errors identified by the teachers until the practice works correctly, having until the deadline mentioned above. Once the approval of the teachers has been obtained, the students will obtain the indicated mark.

The correction of the errors found by the teachers in practices 1 and 2, depending on their number and importance, may give rise to a penalty in the final grade for the subject.

- The rest of the practices (whose number will be established at the beginning of the course) will be worth 2.5 points and can be delivered from the time the approval of the teachers is obtained for practice 2, and until the end of the classes, or a later date indicated in his moment. These practices will be evaluated as they are delivered, without the possibility of correcting the errors observed.

- Practical test: On the day of the exam, a practical test will be carried out on some of the practices delivered, consisting of a modification of the original functionality, to verify that the students have adequate command of the delivered code.

EG:

Students who have opted for EG must take a final exam out of 5 points and hand in practices 1 and 2 before finishing classes (with possible modifications specified at the time). The students must correct the errors identified by the teachers until they obtain their approval (with the penalty described above depending on their importance). Then you can deliver the rest of the practices, always before finishing classes. In addition, you must also take the practical test.

Passing the subject: Both in the case of EC and EG, to pass the subject, students must obtain at least 2.5 points in each part (theory and practice). In the case of not exceeding the minimum grade in any of the parts, the score obtained by adding both parts will be adjusted to 4.9 points in the case of exceeding said value.

In the case of suspending only one of the parts, the students will only have to do the other part in the extraordinary opportunity.

Extraordinary opportunity:

The students must take the same theoretical exam described in the case of the EG, hand in the practices that are specified (published during the month of March), and take the practical test already described.

End of career announcement:

It will have the same characteristics as the extraordinary opportunity. The practices may undergo modifications or incorporate additional functionalities that will be communicated in the month of July.

In principle, none of the marks obtained in both parts in the ordinary or extraordinary opportunities are kept for this call. Once the practices of this call have been published, the teaching staff of the following year will decide and inform opportunely about whether or not to keep the grades obtained in the previous calls.

In case of detection of plagiarism in any of the tests, the final grade will be FAIL (0) and the fact will be communicated to the Center's management so that it can take the appropriate effects.

Sources of information
Basic Bibliography
Complementary Bibliography
H.M Deitel et al., **Internet and World Wide Web How to Program: International Edition**, 5, 2012
Robert W. Sebesta, **Programming the World Wide Web**, 8, 2014
Andrew S. Tanenbaum, **Computer Networks**, 5, 2012
Priscilla Walmsley, **Definitive XML Schema, 2/E**, 2, 2012
W. Stallings, **Data and Computer Communications**, 9, 2013
J Murach, M. Urban, **java Servlets and JSP**, 3, Murach, 2014
S. Holzner, **Ajax**, 1, McGraw Hill, 2009
Ethan Brown, **Web Development with Node and Express: Leveraging the JavaScript Stack**, 1, O'Reilly, 2014
Andrew Lombardi, **WebSocket: Lightweight Client-Server Communications**, 1, O'Reilly, 2015

Recommendations

Subjects that it is recommended to have taken before
Programming II/V05G301V01110