



## IDENTIFYING DATA

### Internet Services

Subject	Internet Services			
Code	V05G301V01301			
Study programme	Degree in Telecommunications Technologies Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language	Spanish			
Department				
Coordinator	Gil Solla, Alberto Burguillo Rial, Juan Carlos			
Lecturers	Álvarez Sabucedo, Luis Modesto Burguillo Rial, Juan Carlos Gil Solla, Alberto Mikic Fonte, Fernando Ariel			
E-mail	jrial@uvigo.es alberto.gil@uvigo.es			
Web	<a href="http://http://fatic.uvigo.es">http://http://fatic.uvigo.es</a>			
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.			

## Competencies

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 network 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.

## Learning outcomes

Expected results from this subject	Training and Learning Results
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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	<ul style="list-style-type: none"> <li>- DNS</li> <li>- Electronic mail</li> <li>- World Wide Web: architecture, languages, protocols.</li> </ul>
Information structure	<ul style="list-style-type: none"> <li>- XML introduction</li> <li>- NameSpaces,</li> <li>- Document Object Model (DOM)</li> <li>- JSON</li> <li>- XML Schema</li> </ul>
Server-side development technologies	<ul style="list-style-type: none"> <li>- CGI, FastCGI, DSO modules</li> <li>- PHP</li> <li>- Servlets</li> <li>- JSP</li> <li>- XPath, XSLT</li> </ul>
Client-side development technologies	<ul style="list-style-type: none"> <li>- JavaScript</li> <li>- jQuery</li> <li>- Ajax, SSE</li> <li>- Angular</li> <li>- MEAN stack</li> <li>- WebSockets</li> </ul>
Web Services	<ul style="list-style-type: none"> <li>- Simple Object Access Protocol (SOAP)</li> <li>- Universal Description, Discovery and Integration (UDDI)</li> <li>- Web Services Description Language (WSDL)</li> </ul>
Additional services	<ul style="list-style-type: none"> <li>- Sharing resources among peers (P2P)</li> <li>- Semantic Web</li> <li>- Cloud Computing</li> </ul>

## Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	2	2	4
Lecturing	24	24	48
Practices through ICT	26	38	64
Discussion Forum	0	4	4
Self-assessment	0	2	2
Objective questions exam	1	10	11
Essay questions exam	1	10	11
Problem and/or exercise solving	2	4	6

\*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	<p>Along the theory classes we will describe the main contents of the subject by means of slides.</p> <p>Theory classes will promote the competences: CT2, CT3 y CT4.</p> <p>Besides, the exam for this part evaluates the competencies: CG3, CG4, CG6, CE11, CE18.</p>

Practices through ICT	<p>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.</p> <p>These practices evaluate the competences: CG3, CG4, CG6, CG9, CE11, CE18 and promote the competences CT2, CT3 y CT4.</p>
Discussion Forum	<p>During the course we will discuss several topics, related with the concepts seen in theory, in the forums of the subject.</p> <p>This forum will promote the competences: CG3, CG6, CT2, CT3 and CT4.</p>

### 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.
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.
Tests	Description
Objective 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.
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.
Problem and/or exercise solving	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.

### 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	
Objective questions exam	There will be a theoretical exam at the end of the course about the contents seen in it. This part will be made up of short and/or multiple choice questions.	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 seen in it. This part will be made up of development questions where the student will describe one or several concepts, relating them to each other, and illustrating them with examples.	25	B3 B4 B6	C11 C18	D2 D3
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.	50	B3 B4 B6	C11 C18	D2 D3

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## Other comments on the Evaluation

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The subject is composed of a theoretical part and a practical part. Each one of them is valued with 5 points, having to obtain at least 2,5 points in each part to pass the subject.

Following the guidelines of the career two systems of evaluation will be offered to the students following this subject: continuous assessment (EC) and exam-only assessment (EU).

EC:

- The student follows the continuous assessment from the moment he delivers a practice.
- The theoretical part is composed of a final exam (with a value of 5 points). This final exam will be the same for all the students, independently that they have opted or not by the EC. Additionally, the students following the EC can receive until 1 extra point from the activities realized in class and/or through the forums of the subject. Half of that extra grade will be added to the theory grade in any case. The other half, only if the theoretical part is passed. Finally, the theory part grade will be adjusted to 5 if the result is higher.

The final exam consists of two parts, ET1 and ET2, both of them optional. Both score over 5, and the grade of the final exam (GRADE) is computed as follows: if ET1 is passed,  $GRADE = 2,5 + ET2/2$ ; if not,  $GRADE = ET2$ . In any case, it is possible an adjustment later described.

- The practical part is composed of three practices.
- The practice 1 is valued with 0,5 points, will be delivered along the month of October, on pending date. The student will have to correct the errors found, moment in which he will obtain the indicated grade.
- The practice 2 is valued with 2 points and can be delivered until a week before the exam. After delivery, the student will have to correct the errors identified by the professors until the practice work properly, with dead-line until a week before the exam. Once obtained the approval of the professors, the student will receive the indicated grade.

The correction of the errors identified by teachers in practices 1 and 2, depending on number and importance, could lead to a penalty in the final grade of the subject.

- The third practice is valued 2,5 points and can be delivered from the approval of the practice 2, to the end of classes. The practice will be evaluated as delivered, without possibility of correction of the errors observed.
- Practical exam: The day of the exam, a practical test will be done for practices 2 and 3, consisting in a modification of the original functions, to check that the student master the delivered code. This practical test will have a result of 1 (modifications work) or 0,25 (don't work) for each practice independently.

The grade of the practical part will be the addition of the grades of the practice 1 and the other practices multiplied by the result of their corresponding test.

EU:

The students that have not opted by the EC will have to attend the theoretical exam and deliver the practices 1 and 2 before finishing the classes (with the modifications specified). The students will have to correct the errors identified by the professors until obtaining approval (with the aforementioned penalty). Then, they can deliver practice 3, always before the end of the classes. Besides, they will have to pass the practical test.

Passing the subject: Both in EC and in EU, to pass the subject the student will have to obtain at least 2,5 points in each part. In the case of not obtaining the minimum grade in any of the parts, the grade obtained adding both parts will be reduced to 4 points in the case to be above such grade.

In the case that the resultant grade is less than 2,5 points, the student will have to deliver the practices of the second chance and pass the practical test.

Second call:

The student will have to fulfill the same theoretical exam as the first call, deliver the specified practices (published in March), and perform the described practical test.

In case some part was passed in the first call, the grade is preserved and it is not necessary to repeat the described activities of such part.

End-of-program call:

It will have the same characteristics than the second call. The practices could suffer modifications or incorporate additional functionalities that will be communicated along July.

Initially, none of the grades obtained in both parts in the first and second calls are preserved for this call. Once the practices of this call have been published, the teaching staff will decide and report in a timely manner on whether or not the grades obtained in the previous calls are kept.

Plagiarism is regarded as serious dishonest behavior. If any form of plagiarism is detected in any of the tests or exams, the final grade will be FAIL (0), and the incident will be reported to the corresponding academic authorities for prosecution.

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## Sources of information

### Basic Bibliography

H.M Deitel et al., **Internet and World Wide Web How to Program: International Edition**, 5, 2012

Priscilla Walmsley, **Definitive XML Schema**, 2/E, 2, 2012

Michael Papazoglou, **Web Services and SOA: Principles and Technology**, 2/E, 2, 2012

Steve Graham et al., **Building Web Services with Java: Making Sense of XML, SOAP, WSDL, and UDDI**, 2, 2004

J Murach, M. Urban, **java Servlets and JSP**, 3, Murach, 2014

Ethan Brown, **Web Development with Node and Express: Leveraging the JavaScript Stack**, 978-1491949306, 1, O'Reilly, 2014

Andrew Lombardi, **WebSocket: Lightweight Client-Server Communications**, 978-1449369279, 1, O'Reilly, 2015

### Complementary Bibliography

Robert W. Sebesta, **Programming the World Wide Web**, 8, 2014

Andrew S. Tanenbaum, **Computer Networks**, 5, 2012

Kevin Howard Goldberg, **XML: Visual QuickStart Guide**, 2/E, 2, 2008

Thomas Erl, **Service-Oriented Architecture: A Field Guide to Integrating XML and Web Services**, 1, 2004

W. Stallings, **Data and Computer Communications**, 9, 2013

S. Holzner, **Ajax**, 1, McGraw Hill, 2009

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## Recommendations

### Subjects that continue the syllabus

Architectures and Services/V05G300V01645

New computerised services/V05G300V01945

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## Subjects that it is recommended to have taken before

Programming II/V05G301V01110

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## Contingency plan

### Description

In the case that the teaching is exclusively remote, the classes of the subject will be developed in a similar way, but using the platforms provided by the University.

Virtual classes will be taught weekly through the Remote Campus, both in the theoretical sessions (groups A) and in the practical sessions (groups B). In this second case, the students will develop and test the software using their personal computers.

The means enabled for the resolution of the doubts raised by the students will include online consultation forums and tutorials in the teacher's virtual office.

The remote assessment of the subject will be governed by the conditions described in the teaching guide for the regular teaching, including the same number of tests, identical weighting and minimum grades. The theoretical and practical exams will be carried out virtually, using the platforms provided by the University.