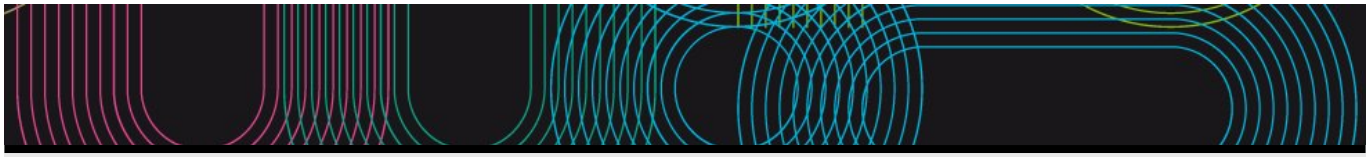

IDENTIFYING DATA				
Applications developing for the Internet				
Subject	Applications developing for the Internet			
Code	O06G151V01417			
Study programme	Grado en Ingeniería Informática			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Reboiro Jato, Miguel			
Lecturers	Novo Lourés, María Reboiro Jato, Miguel			
E-mail	mrjato@uvigo.es			
Web	http://moovi.uvigo.gal			
General description	This subject focuses on the programming of applications oriented to the use of the latest technologies available for the generation of rich Internet applications. Special attention will be paid to the set of APIs available in Java for the use of XML, multithreaded application development, database access and distributed client/server programming using TCP sockets, UDP datagrams and remote method invocation. 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	
A2	Students will be able to apply their knowledge and skills in their professional practice or vocation and they will show they have the required expertise through the construction and discussion of arguments and the resolution of problems within the relevant area of study.
A4	Students will be able to present information, ideas, problems and solutions both to specialist and non-specialist audiences.
A5	Students will acquire the learning skills that are required to pursue further studies with a high degree of independence.
B6	Ability to conceive and develop centralized or distributed computing systems and architectures, integrating hardware, software and networks, according to the knowledge and training acquired.
B9	Ability to solve problems by taking the initiative, making decisions and acting independently and creatively. Ability to communicate the knowledge contents, skills and abilities of the Computer Science Engineer profession.
C12	Knowledge and application of basic algorithmic procedures of computer technologies to design solutions to problems, analyzing the appropriacy and complexity of the proposed algorithms.
C13	Knowledge, design and efficient use of the most appropriate data structures and types for the resolution of a problem.
C14	Ability to analyze, design, build and maintain applications in a robust, safe and efficient way, choosing the most appropriate paradigm and programming languages.
C18	Knowledge and application of the characteristics, functions and structure of data bases, allowing their appropriate use, and design, analysis and implementation of applications based on them.
C19	Knowledge and application of the necessary tools for storing, processing and accessing information Systems, including web-based ones.
C20	Knowledge and application of the fundamental principles and basic techniques of parallel, concurrent, distributed and real-time programming.
C23	Ability to design and assess human-computer interfaces to guarantee accessibility and usability of computer systems, services and applications.
C27	Ability to solve problems of integration according to available strategies, standards and technologies.
C36	Ability to design systems, applications and services based on network technologies, including the Internet, web, e-commerce, multimedia, interactive services and mobile computing.
D4	Analysis, synthesis and evaluation capacity

D5	Organizational and planning skills
D6	Ability to abstract: ability to create and use models that reflect real situations
D7	Ability to search, relate and structure information from various sources and to integrate ideas and knowledge.
D9	Ability to quickly integrate and work efficiently in unidisciplinary teams and to collaborate in a multidisciplinary environment
D11	Critical thinking
D14	Have motivation for quality and continuous improvement

Expected results from this subject

Expected results from this subject	Training and Learning Results			
LO1. Know the fundamental bases of Internet	A2 A4 A5	B9	C18 C19 C20	D4 D7 D9 D11 D14
LO2. Communicate two or more applications over a network	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D11 D14
LO3. Adequately manage the multithreading capabilities of programs so that they can efficiently serve multiple simultaneous clients	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D11 D14
LO4. Adequately manage database access capabilities	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D11 D14
LO5. Use a markup language for storing information	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D11 D14
LO6. Know the basics of remote procedure invocation for application integration.	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D11 D14

LO7. Perform the complete design of the requirements of an application that uses Internet resources	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D14

Contents	
Topic	
Introduction	Introduction to Internet and the Web, including the development of the protocol HTTP.
Sockets	Use of sockets for the communication between applications employing TCP and UDP protocols.
Multithreading	Analysis of the capacities of the multithreaded systems and his use in Internet applications, especially, in server applications.
Database access	Database access and integration from remote or local applications.
XML	Use of XML and other related technologies.
Web services	Introduction to web services and related technologies (SOAP, WSDL and UDDI).

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	16.5	16.5	33
Laboratory practical	8	8	16
Problem and/or exercise solving	3	14	17
Presentation	3	10	13
Project	22	49	71
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Lecturing	Exposition of the theoretical contents of the subject. In order to facilitate the understanding of the subject and increase the student's interest, various examples will be included in which the student's active participation may be required. CONTINUOUS ASSESSMENT Character: not mandatory Attendance: not mandatory GLOBAL ASSESSMENT Character: not mandatory
Laboratory practical	Practical exercises on the contents of the material that will be solved collaboratively by all the students. These exercises are complemented with optional exercises with which students can deepen in a practical way in the contents of the subject after being worked on in the classroom. CONTINUOUS ASSESSMENT Character: mandatory Attendance: not mandatory Grading will take into account both the classes attended and active participation in them. GLOBAL ASSESSMENT Character: not mandatory

Personalized assistance	
Methodologies	**Description**
Laboratory practical	Attention to students' questions and doubts that may arise during the work to be done in the classes.
Tests	**Description**

Project	Weekly monitoring of the work on the project and resolution of any doubts that may arise in relation to it.
Presentation	Guidance on the topic of the presentation during the preparation of the presentation and leading a discussion on the topic after the presentation.

Assessment

	Description	Qualification	Training and Learning Results			
Laboratory practical	Regular attendance and active participation in solving exercises in the practical laboratory. Expected results from this subject: LO2, LO3, LO4, LO5, and LO6.	10	A2 A4 A5	B9	C12 C13 C18 C19 C20	D4 D5 D6 D9 D14
Problem and/or exercise solving	Realisation of different tests throughout the course that will include theoretical and practical content corresponding to the subject matter taught during the classroom classes. Expected results from this subject: LO1, LO2, LO3, LO4, LO5, and LO6	40	A2 A5	B9	C18 C19 C20	D4 D11
Presentation	Preparation and presentation in small groups of a topic related to the subject. The evaluation of the work will take into account the content of the work, its oral presentation and its contextualisation within the subject. In addition, students will be assessed on their ability to grade the work presented by their peers. Expected results from this subject: LO1	10	A4 A5			D4 D7 D9 D11 D14
Project	Carrying out a project in which the theoretical and practical contents of the subject are applied in a practical way. Multiple submissions will be made throughout the course. Expected results from this subject: LO2, LO3, LO4, LO5, LO6, and LO7.	40	A2 A4 A5	B6 B9	C12 C13 C14 C18 C19 C20 C23 C27 C36	D4 D5 D6 D9 D14

Other comments on the Evaluation

EVALUATION CRITERIA FOR THE 1ST EDITION OF THE RECORDS

Throughout the first month of the course, those students who wish to do so may request, through the subject's Moovi, to be assessed using the global assessment method.

[Continuous Assessment]

Final grade = 0.1 * grade for "Presentation" + 0.1 * grade for "Laboratory practical" + 0.4 * grade for "Project" + 0.4 * grade for "Problem and/or exercise solving".

[Global Assessment]

In this type of assessment, the same criteria as in continuous assessment will be applied, with the following differences:

- The "Presentation" methodology will only be presented to the lecturers of the subject.
- In the "Problem and/or exercise solving" methodology, there will be a single test.
- In the "Project" methodology, there will be a single submission, and additionally, a final test on the project must be done.

Final grade = 0.1 * grade for "Presentation" + 0.45 * grade for "Project" + 0.45 * grade for "Problem solving and/or exercises"

EVALUATION CRITERIA FOR EXTRAORDINARY AND END-OF-COURSE EXAMS

The same assessment criteria as in the 1st edition of the records will be maintained for both continuous assessment and global assessment, with the sole difference that in both types of assessment, the "Presentation" methodology will only be presented to the lecturers of the subject.

In the particular case where a student evaluated through the criteria of continuous assessment has passed all the parts that require a minimum score but still does not reach a 5 in the overall grade due to obtaining less than a 5 in the "Laboratory practical" methodology, they must take a practical test on the contents of the laboratory practices to pass this methodology.

GRADING PROCESS

In any of the calls, the student must pass each of the assessment methodologies and the partial tests of which they are composed in order to pass the subject. An assessment methodology will be considered to be passed when a mark equal to or higher than 50% of the maximum mark for that methodology is obtained. In addition, a test will be considered to be passed when a mark equal to or higher than 40% of the maximum mark for that test is obtained. In the event that a student does not pass any of the methodologies and/or tests, a maximum of 4.9 points will be assigned as the final mark for the subject.

In the specific case of the "Laboratory practical" methodology, no minimum mark will be required.

EVALUATION DATES

The dates of the tests corresponding to the continuous evaluation system will be published in the calendar of activities, available on the ESEI website https://esei.uvigo.es/docencia/horarios/.

The official exam dates for the different calls, officially approved by the ESEI Xunta de Centro, are published on the ESEI website https://esei.uvigo.es/docencia/horarios/.

USE OF MOBILE DEVICES

All students are reminded of the prohibition of the use of mobile devices in exercises and practices, in compliance with Article 13.2.d) of the University Student Statute, regarding the duties of university students, which establishes the duty to " Abstain from the use or cooperation in fraudulent procedures in evaluation tests, in the work performed or in official university documents."

CONSULTATION/REQUEST FOR TUTORING

Tutoring can be consulted through the faculty member's personal page, accessible through https://esei.uvigo.es/docencia/profesorado/.

Sources of information
Basic Bibliography
Cay S. Horstmann, **Core Java, Vol. II-Advanced Features, 12th Edition**, 978-0137870899, 1ª, Oracle Press, 2022
Martin Kalin, **Java web services, up and running**, 978-1449365110, 1ª, O'Reilly, 2009
George Reese, **Database Programming with JDBC and Java**, 978-1565926165, 2ª, O'Reilly, 2000
Bill Evjen ... [et al.], **Professional XML**, 978-0471777779, 1ª, Wiley Publishing, 2007
Joe Fawcett, Danny Ayers y Liam R.E. Quin, **Beginning XML**, 978-1118162132, 5ª, John Wiley & Sons, 2012
Complementary Bibliography
David Parsons, **Desarrollo de aplicaciones web dinámicas con XML y Java**, 978-8441525924, 1ª, Anaya Multimedia, 2009
Balachander Krishnamurthy, **Web protocols and practice : HTTP/1.1, networking protocols, caching, and traffic measurement**, 978-0201710885, 1ª, Addison Wesley, 2001

Eben Hewitt, **Java SOA cookbook**, 978-0596520724, 1ª, O'Reilly, 2009

Recommendations

Subjects that are recommended to be taken simultaneously

Mobile devices/O06G151V01416
Web services and technologies/O06G151V01414

Subjects that it is recommended to have taken before

Programming 2/O06G151V01109
Databases 1/O06G151V01209
Concurrency and distribution/O06G151V01308