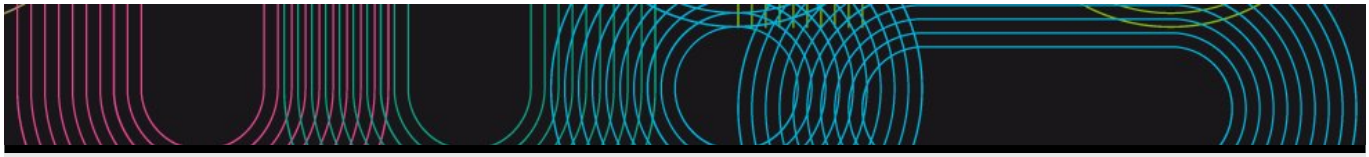

IDENTIFYING DATA				
Networks				
Subject	Networks			
Code	O06G460V01205			
Study programme	(*)Grao en Intelixencia Artificial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	2nd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Méndez Reboredo, José Ramón			
Lecturers	Gómez Meire, Silvana Méndez Reboredo, José Ramón Pérez Pérez, Martín			
E-mail	moncho.mendez@uvigo.es			
Web	http://moovi.uvigo.gal			
General description	Introduction to computer networks and the Internet. Network protocols. Local area networks. Network services. Virtualisation. Cloud models. Development and deployment of applications and services in the cloud.			

Training and Learning Results	
Code	
A2	That students know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
A5	That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.
B2	Ability to solve problems with initiative, decision making, autonomy and creativity.
C6	Know the structure, organization, operation and interconnection of computer systems (computer, operating systems and computer networks).
C7	Understand and apply the basic principles and techniques of parallel and distributed programming for the development and efficient execution of artificial intelligence techniques.
C9	Ability to deploy in the cloud artificial intelligence applications that run efficiently with defined computational resources.
D3	Ability to create new models and solutions in an autonomous and creative way, adapting to new situations. Initiative and entrepreneurial spirit.

Expected results from this subject	Training and Learning Results			
R1- Understand the basic operation of the current computer networks and the importance using standardized protocols.	A2 A5	B2	C6	D3
R2 - Learn the protocols that are the basis of Internet and the current local networks.	A2 A5	B2	C6	D3
R3 - Learn to configure and administrate a local network.			C6	
R4 - Understand the bases of the cloud computing, and the models of cloud.	A2 A5	B2	C9	D3
R5 - Know the different mechanisms of server virtualisation and be able to deploy virtualised systems.	A2 A5		C6	
R6 - Know and understand the different models of service and deployment models associated to cloud computing, as well as the services provided by providers of cloud guided to the artificial intelligence.		B2	C7 C9	D3
R7 - Be able to deploy services in the cloud.			C7 C9	

R8 - Know conceive and design new applications based in Internet or the technologies that support it.	A2	B2	C6 C7 C9	D3

Contents

Topic	
P1. Computer Networks	P1.T1. Introduction to computer networks P1.T2. Application layer P1.T3. Transport layer P1.T4. Net and Link layers (Ethernet)
P2. Virtualizatíon	P1.T1. Virtualization P1.T2. Containers
P3. Cloud Computing	P3.T1. Introduction to Cloud Computing P3.T2. Software as a Service Model P3.T3. Platform as a Service Model P3.T4. Infrastructure as a Service Model P3.T5. Provisioning

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	18	28.5	46.5
Laboratory practical	26	52	78
Seminars	1.5	0	1.5
Objective questions exam	4	20	24

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

Methodologies

	Description
Lecturing	Classroom sessions for large groups, where the contents corresponding to each subject are explained.
Laboratory practical	Two-hour laboratory sessions, where the concepts introduced in the theory will be put into practice. Each session will include a series of questions or practical cases that must be handed in before the next session. The laboratory practicals will be mandatory for students who take part in the continuous assessment system.
Seminars	Seminars to complement the teaching. In this particular case, students will receive a seminar on the use of Terraform to automate the provisioning of infrastructure in the cloud.

Personalized assistance

Methodologies	Description
Laboratory practical	The teacher will guide the students through the practical exercises, resolving any doubts that may arise.

Assessment

	Description	Qualification	Training and Learning Results			
Laboratory practical	We will evaluate the knowledge through solving exercices propossed by the teacher. Results: R3, R4, R5,R7 and R8.	60	A2 A5	B2	C7 C9	D3
Objective questions exam	The student will have an examination to evaluate the theoretical knowledges obtained. Results: R1, R2, R5 and R6.	40			C6	

Other comments on the Evaluation

CONTINUOUS ASSESSMENT SYSTEM

The continuous assessment system consists of two parts: (*i*) the objective questions exam and (*ii*) the laboratory practical.

*(i). Objective questions exam*This is an exam to be taken on the date scheduled in the school's calendar of final exams. It will consist of short questions or multiple-choice questions and will serve to assess the theoretical knowledge acquired by the student.Methodology(s) applied: Examination of objective questions.
Grading %: 40%.
Minimum %: In order to pass this part of the subject, the student must obtain a qualification equal to or higher than 5 points out of 10.

Competences assessed: C6.
Assessed outcomes: R1, R2, R5 and R6.
(ii). Laboratory practical
This consists of the delivery of all the laboratory practicals (at least 4) proposed throughout the course.
Methodology(s) applied: Laboratory practicals.
Qualification: 60% in total
Minimum %: To pass this part of the subject the student must obtain a grade equal to or higher than 5 points out of 10.
Competences assessed: A2, A5, B2, C7, C9 and D3.
Assessed outcomes: R3, R4, R5, R7 and R8.

When a student submits any of the laboratory practical, we will understand he/she has taken part in the continuous assessment procedure described above.

If a student does not submit any of the tests, he/she will be assigned a grade of 0 in it.

OVERALL ASSESSMENT SYSTEM

When a student does not submit any of the laboratory practicals, it is understood that he/she chooses the global assessment modality.

In the same way as in the previous case, the global assessment system consists of two parts: (*i*) the objective questions exam and (*ii*) the laboratory practical.

(i). Objective questions exam

This is an examination to be taken on the date scheduled in the school's final examination timetable. It will consist of short questions or multiple-choice questions and will serve to assess the theoretical knowledge acquired by the student.
Methodology(ies) applied: Examination of objective questions.
Grading: 40%.
Minimum %: To pass this part of the subject, the student must obtain a grade equal to or higher than 5 points out of 10.
Competences assessed: C6.
Assessed outcomes: R1, R2, R5 and R6.

(ii). Laboratory practicals

It is assumed that the student does not attend regularly to the practical sessions and/or does not deliver the corresponding deliveries, so he/she will have to take an exam that consists of a laboratory practice provided by the teachers in which the student will have to apply the practical knowledge that was taught in the subject. It will be held after (and on the same day) the exam of objective questions.

Methodology(ies) applied: Laboratory practicals.
Grading: 60% in total.
Maximum %: In order to pass this part of the subject the student must obtain a grade equal to or higher than 5 points out of 10.
Competences assessed: A2, A5, B2, C7, C9 and D3.
Assessed results: R3

ASSESSMENT CRITERIA FOR EXTRAORDINARY AND FINAL EXAMS

The continuous and global assessment systems described above will be used. The scores of the parts passed in the ordinary exams will be retained.

GRADING PROCESS

Regardless of the assessment system and the call, if any part of the assessment is not passed, the overall mark will be that of the part not passed.

ASSESSMENT DATES

The official exam dates for the different exam sessions, officially approved by the ESEI's Xunta de Centro, are published on the ESEI's website (https://esei.uvigo.es).

USE OF MOBILE DEVICES

All students are reminded of the prohibition of the use of mobile devices during the assessment tests. In particular, article 13.2.d) of the University Student Statute, concerning the duties of university students, establishes the duty to abstain from "the use of or cooperation in fraudulent procedures in the assessment tests, in the work carried out or in official university

documents".

CONSULTATION/REQUEST FOR TUTORIALS

Tutorials can be consulted through the teaching staff's personal web page, accessible through the address https://esei.uvigo.es/docencia/profesorado/.

Sources of information

Basic Bibliography

Kurose, James F. y Ross, Keith W., **Redes de Computadores. Un enfoque descendente.**, 978-849035-528-2, 7, Pearson Education, 2017

Peterson, Larry L. y Davie, Bruce S., **Computer networks: a systems approach.**, 978-0-12-385059-1, 5, Morgan Kaufmann, 2012

James Bernstein, **VirtualBox Made Easy: Virtualize Your Environment with Ease: 6 (Computers Made Easy)**, 978-1654146245, 1, Independently published, 2020

William Shotts, **The Linux Command Line, 2nd Edition: A Complete Introduction**, 978-1593279523, 2, No Starch Press, 2019

Neil Middleton y Richard Schneeman, **Heroku: Up and Running: Effortless Application Deployment and Scaling**, 978-1449341398, 1, O'Reilly Media, 2013

Wasim Ahmed, **Mastering Proxmox - Third Edition: Build virtualized environments using the Proxmox VE hypervisor**, 978-1788397605, 3, Packt Publishing, 2017

Yevgeniy Brikman, **Terraform - Up and Running: Writing Infrastructure as Code**, 978-1-098-11674-3, 3, O'Reilly Media, 2022

Complementary Bibliography

Jeff Geerling, **Ansible for DevOps: Server and configuration management for humans**, 978-0986393426, 1, Leanpub, 2022

Recommendations

Subjects that continue the syllabus

Concurrent, parallel and distributed computing/O06G460V01208

Subjects that it is recommended to have taken before

IT:/O06G460V01104
IT: Programming 1/O06G460V01103

Other comments

We recommend the students to have skills in the handle of the computer and specially typing fast using a computer keyboard.

We also recommend to have some experience in the use of operative systems and, especially, GNU/Linux.

We recommend to have skills in the use of resources in Internet (search engines, etc.).