# UniversidadeVigo

## Subject Guide 2018 / 2019

IDEN	NTIFYI						
Mult Cubi	timedia	Networks					
Subj	ect	Networks					
Code	د	V05G300V01643					
Stud	v V	Degree in					
prog	, ramme	Telecommunications					
		Technologies					
		Engineering					
Desc	riptors	ECTS Credits		Choose	Year	Quadm	ester
<del>.</del>	h	6 Cuantat		Optional	3rd	2nd	
leac	ning	Spanish					
Dona	artmont	Telematics Engineering					
Coor	dinator	López García, Cándido Antonio					
Lecti	urers	Herrería Alonso, Sergio					
		López García, Cándido Antonio					
E-ma	ail	candido@det.uvigo.es					
Web		http://faitic.uvigo.es					
Gene	eral	This subject presents the main spec	cific technological	solutions for distri	buting multimedia	contents ov	er
desc	ription	telecommunication networks.					
Com	peten	cies					
Code	5						
B3	CG3: T	he knowledge of basic subjects and	technologies that	enables the stude	ent to learn new me	thods and	
DC	techno	logies, as well as to give him great v	Price	ont and adapt to r	new situations		
C30	CG0: 1	El 4 The ability to describe program	pecifications, proc	nizo communicati	on protocols and in	torfacos at	difforent
C30	networ	k architecture lavers	i, assess and optil		on protocols and in	lenaces al	umerent
C33	CE33/1	EL7 The ability to program network	and distributed an	polications and ser	rvices.		
D3	CT3 Av	vareness of the need for long-life tra	ining and continue	ous quality improv	ement, showing a f	lexible, ope	n and
	ethical	attitude toward different opinions a	nd situations, part	icularly on non-di	scrimination based	on sex, race	e or
	religio	n, as well as respect for fundamenta	l rights, accessibil	ity, etc.			
Lear	rning o	utcomes					
Expe	ected re	sults from this subject			Т	raining and	Learning
						Resu	ts
(*)CE	E-14 Co	mprender el concepto de responsab	ilidad social corpo	rativa, ser capaz o	de elaborar una		
mem	noria de	sostenibilidad conforme a las norm	as establecidas y	utilizarla como me	edio de		
	compro	honsion of basic concepts in digital	ganización. opcoding of audio	and video			
The	knowlog	nension of basic concepts in digital	d of digital opcodi	and video.			
The	knowley	lige and comprehension of the main		n the transmission	of multimedia B3	<u> </u>	
cont	ents		problems raised i			C30	5
The	knowle	lge of the main protocols used for th	ne transmission of	multimedia conte	ents.	C30	
The	knowle	lge and comprehension of the main	techniques used t	o provide quality	of service in B3	C30	D3
Inter	net.					-	
The	ability t	o analyze and develop VoIP network				C30	
						C33	
Con	tents						
Торі	с						
Enco	ding of	digital audio and video	a) Digital audio	(PCM). Audio com	pression		
			<ul> <li>b) Digital video</li> </ul>	Intraframe and ir	nterframe compress	sion	

Multimedia applications	a) Classes. Quality of service (QoS) requirements b) Impact of delay and packet losses c) Content distribution. Multicast. CDN d) IP telephony: architecture, codecs, softphones, softswitches
Multimedia protocols	a) Transport protocols: TCP/UDP, RTP, HTTP b) Adaptive streaming. MPEG-DASH c) Session protocols: SIP, H.323, RTSP
Quality of service in the Internet	a) Monitoring and policing techniques b) Scheduling and resource allocation c) Differentiated Services (DiffServ) d) Integrated Services (IntServ). RSVP

Planning				
	Class hours	Hours outside the classroom	Total hours	
Lecturing	20	40	60	
Computer practices	12	18	30	
Supervised work	6	24	30	
Problem solving	1	5	6	
Essay	1	5	6	
Problem solving	2	16	18	
*The information in the planning table	is for guidance only and does no	ot take into account the het	erogeneity of the students.	

Methodologies	
	Description
Lecturing	Exhibition of the ideas, concepts and techniques of each topic of the course. In these sessions, students must acquire competences CG3, CG6, CE30 and CT3.
Computer practices	Practical learning of basic tools for the distribution of multimedia contents on computer networks. Group activity. In these sessions, students must acquire competences CE30 and CE33.
Supervised work	Configuration, with the teacher's guidance, of a basic IP PBX. Group activity. This work should help students to acquire competence CE33.

Personalized attention			
Methodologies	Description		
Lecturing	It will be dispensed personalized attention during the office hours that will be announced at the beginning of the course. There is no appointment necessary.		
Computer practices	It will be dispensed personalized attention during the office hours that will be announced at the beginning of the course. There is no appointment necessary.		
Supervised work	It will be dispensed personalized attention during the office hours that will be announced at the beginning of the course. There is no appointment necessary.		

Assessment					
	Description	Qualification	Tra L	ining and earning Results	
Problem solving	Midterm exam covering some of the contents of the subject. Questions and problems of conceptual, logical, analytical or applied character. One hour long written exercise.	20	B3 B6	C30	
Essay	Evaluation of the features and performance of the IP PBX configured by the student during the course.	20		C33	
Problem solving	Final exam covering all the contents of the subject. Questions and problems of conceptual, logical, analytical or applied character. Two hour long written exercise.	60	B3 B6	C30	

### Other comments on the Evaluation

Two different methods of evaluation will be offered to the students: continuous assessment and eventual assessment.

Students opting for the continuous assessment must take two intermediate tasks: a midterm exam (20% of the final grade) and a project involving the configuration of a basic IP PBX (20% of the final grade), together with a final exam at the end of the course (60% of the final grade). If the score of the final exam is less than 3.5/10, then the final grade of the subject will be the score obtained in this final exam. The score of the project will take into account both the features and performance of the IP PBX configured (75%) and the answers to a practical exam that must be solved individually (25%). Both intermediate

tasks are not recoverable and will be only valid for the current course.

Students can also opt for being evaluated by means of just a final exam at the end of the course. The final grade of the subject will be, in this case, just the score obtained in this exam.

It will be considered that a student opts for the continuous assessment if he takes the midterm exam or the project proposed. The final exam will contain some additional questions for those students that have opted by the eventual assessment.

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.

Those students that have not passed the subject in first call will have to take an extra written exam in July. Those students that opted for the continuous assessment will be able to choose between evaluation by means of just the final exam or to keep continuous assessment. In the latter case they would keep the scores obtained in the intermediate tasks (midterm exam and project) and would only have to take the final exam as the last task. Students must indicate which method they choose at the final exam.

In extraordinary calls the assessment will just consist in the realisation of a written exam including ALL the contents of the subject.

The schedule of the midterm/intermediate exams will be approved in the Comisión Académica de Grado (CAG) and will be available at the beginning of each academic semester.

# Sources of information Basic Bibliography J. F. Kurose, K. W. Ross, Computer networking: a top-down approach, 7ª ed., Pearson, 2016 Kun I. Park, QoS in packet networks, 1ª ed., Springer, 2005 R. Bryant, L. Madsen, J. Van Meggelen, Asterisk: the definitive guide, 4ª ed., O'Reilly Media, 2013 Complementary Bibliography H. W. Barz, G. A. Bassett, Multimedia networks: protocols, design, and applications, 1ª ed., Wiley, 2016 M. Barreiros, P. Lundqvist, QoS-enabled networks: tools and foundations, 2ª ed., Wiley, 2016 Bruce Hartpence, Packet Guide to Voice over IP, 1ª ed., O'Reilly Media, 2013 S. Wintermeyer, S. Bosch, Practical Asterisk 1.4 and 1.6, 1ª ed., Addison-Wesley, 2010 Alan B. Johnston, SIP: Understanding the Session Initiation Protocol, 4ª ed., Artech House Publishers, 2015 Z. Li, M. Drew, J. Liu, Fundamentals of Multimedia, 2ª ed., Springer, 2014

Recommendations

Subjects that continue the syllabus Multimedia services/V05G300V01941

### Subjects that it is recommended to have taken before

Fundamentals of Sound and Image/V05G300V01405 Computer Networks/V05G300V01403