## Universida<sub>de</sub>Vigo

## Subject Guide 2016 / 2017

AIIIII				
IDENTIFYI	NG DATA			
Radiocom	munication			
Subject	Radiocommunication			
Code	V05M145V01103			
Study	Telecommunication			
<u>programme</u>		Chaosa	Voor	Quadmostor
Descriptors	5	Mandatory	1edi	Quadimester
Teaching	Snanish	Manuatory	150	130
language	Spansh			
Departmen	t			
Coordinato	Arias Acuña, Alberto Marcos			
Lecturers	Arias Acuña, Alberto Marcos			
	Rubiños López, José Óscar			
	Vazquez Alejos, Ana			
E-mail	marcos@com.uvigo.es			
Web	In this compulsory matter of first compater, the stud	ant fomiliariogo with	the redicers	unication systems
description	beginning with the antenna properties, continuing w with the calculation of the link budget in different pro- These concepts apply to the study of the services of	ent familiarises with ith the study of the opagation scenarios radar and radioloca	noise and interf lization.	erences and finalising
Compotor				
Code				
A2 CB2 Si	udents must apply their knowledge and ability to solver (or multidisciplinary) contexts related to their field	ve problems in new of study	or unfamiliar er	vironments within
A4 CB4 Si non-sp	cudents must communicate their conclusions, and the pecialists in a clear and unambiguous way.	e knowledge and rea	sons stating the	em-, to specialists and
C2 CE2 TI model	ne ability to develop radio communication systems: a ing; link budgeting; and planning.	ntenna, equipment	and subsystems	design; channel
C3 CE3 T	ne ability to implement systems by cable, line, satellit	te, in fixed and mob	ile communicati	on environments.
C5 CE5 T	ne ability to design systems of radio navigation and p	ositioning, as well a	s radar systems	
Learning o	outcomes			
Expected re	esults from this subject			Training and
(*)Conocim	ientos de los integrantes de una instalación de aire co	omprimido su funcio	onamiento v	
aplicacione	s		j j	
Capacidad	de calcular instalaciones de aire comrpimido			
Conocimier	tos de los integrantes de una instalación de gas, su f	uncionamiento y ap	licaciones	
Capacity to	realise basic antenna designs			A2
				C2
(*)2º PARTE	:: SISTEMAS ELEVACION.	acimiente de la nor	mativa que afec	+
cada diseño	ano de los lipos de ascensor y sus componentes. Com a fabricación instalación nuesta en marcha y mante	nimiento	mativa que alec	.ld d
-Conocimie	nto de la normativa que afecta a la elección del tipo d	de ascensor para ca	da edificación.	
Capacitar a	l alumno para especificar el/los tipo/s de ascensor/es	que requiere cada e	edificación.	
-Conocimie aislamiento	nto sobre las condiciones previas para la instalación o acústico, consumos eléctricos y de seguridad). Capa	de un ascensor (con citar al alumno para	diciones estruct especificar dic	urales, has
- Estudios c	e para cada tipo de ascensor. e tráfico. Capacitar al alumno para dimensionar y ub	icar el/los núcleo/s c	le elevación der	ntro de
una edifica	ción.	ontos linguantes -		
	existentes transformaciones importantes sustitucio	entes (incremento o nes completes esco	ie la seguridad (	ue 105 en
edificios ex reforma en	istentes donde el espacio no lo permite). Capacitar al edificaciones existentes.	alumno para resolv	er proyectos de	

Capacity to calculate link budgets taking into account both signal and perturbations in distinct stages	A2
	C2
	C3
Capacity to design radionavegation and positioning systems	A4
	C3
	C5
Capacity to design radar systems	A4
	C5

Contents	
Торіс	
1. Basic design of antennas	1.1 Fundamental electromagnetic laws
	1.2 Trasmitting antenna
	1.3 Receiving antenna
	1.4 Bands of frequency
	1.5 Types of antennas
	1.6 Friis Formula
	1.7 Transmission losses
2. Models of noise and interferences	2.1 Thermal Noise
	2.2 Antenna Noise
	2.3 Noise Factor and noise temperature of a receptor
	2.4 Concept and types of interferences
	2.5 Characterisation of the interference
	2.6 Concept of availability, fading and diversity
	2.7 Systems limited by noise and by interference
3. Link budget for different propagation modes	3.1 Propagation in low frequencies. Surface and ionospheric waves.
	Electrical field received.
	3.2 Tropospheric propagation.
	3.3 Propagtion losses
4. Design of Radionavigation systems	4.1 Fundamentals of radionavigation
	4.2 Types of radionavigation systems
	4.3 Satellite radionavigation systems
	4.4 Design of a radionavigation system
5. Design of radar systems	5.1 Fundamentals of radar systems. Radar cross section
	5.2 Types of radar systems
	5.3 Design of a radar system

Planning				
	Class hours	Hours outside the classroom	Total hours	
Master Session	20	20	40	
Seminars	4	24	28	
Laboratory practises	13	13	26	
Short answer tests	1	10	11	
Long answer tests and development	1	10	11	
Other	1	8	9	
*The information in the planning table is for	guidance only and does no	ot take into account the hete	erogeneity of the students.	

Methodologies	
	Description
Master Session	Exhibition of the contents of the subject; it includes exhibition of concepts; introduction of practices
	and exercises; and resolution of problems and/or exercises in ordinary classroom.
Seminars	Teaching for few students; they participates very actively in the evolution of the classes deepening in a specific subject, expanding it and relating it with contents oriented to the professional practice. These activities can have related a load of autonomous work of the student.
Laboratory practises	Application, to practical level, of the knowledges and skills adquired in the theoretical classes, by means of practices realised with equipment of test and measure. Also including practical of laboratory realised on computers (simulations, analysis, processed, etc.), exercises of programming, on-line realised works, etc.

Personalized attention			
Methodologies Description			
Master Session	In this methodology, all the questions that each student can ask will be answered.		
Seminars Each student will be attended in an individual way.			

Assessment				
	Description	Qualification	Tra L	ining and earning Results
Short answer tests	Final examination: it consists in a proof for the evaluation of the competencies adquired by the students by means of the resolution of simple problems and short questions of theory.	50	A2 A4	C2 C5
Long answer tests and development	Final exam: it consists in a proof for the evaluation of the competencies adquired by the students. They will have to develop, organise and present the knowledges adquired during the course.	20	A2 A4	C2 C5
Other	Participation in activities by part of the students, especially of the practices. This section corresponds to the continuous evaluation of the student.	30	A2 A4	C2 C5

## Other comments on the Evaluation

The final examination, that will consist of the proof of short answer and the proof of development will represent 70% for the students that opt by continuous evaluation and 100% of the final note in case of not opting by the continuous evaluation.

In case of detection of plariarism in some work/test performed, the final score of the subject will be zero and the teachers will notify this situation to the academic authorities.

## Sources of information

Marcos Arias Acuña, Oscar Rubiños López, Radiocomunicación, 1a, Andavira Editora, 2011

Recommendations		
Subjects that continue the syllabus		
Antennas/V05M145V01208		
Radio Laboratory/V05M145V01209		
Satellites/V05M145V01311		
Wideband Radio Systems/V05M145V01312		