SUBJECT TEACHING GUIDE

G824 - Mathematical Methods for Telecommunications

Degree in Telecommunication Technologies Engineering

Academic year 2018-2019

1. IDENTIFYING DATA					
Degree	Degree in Telecommunication Technologies Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Mathematical Methods for Telecommunications Compulsory Module				
Course unit title and code	G824 - Mathematical Methods for Telecommunications				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Web	http://gtas.unican.es/docencia/mmt				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA DE COMUNICACIONES
Name of lecturer	JAVIER VIA RODRIGUEZ
E-mail	javier.via@unican.es
Office	Edificio Ing. de Telecomunicación Prof. José Luis García García. Planta: - 2. DESPACHO S274 (S274)
Other lecturers	

3.1 LEARNING OUTCOMES
- Formulation of problems from a statistical point of view
- Solution of problems related to random experiments
- Application of random variables, correlation and independence concepts to practical problems
- Statistical characterization of random variables
- Introduction to estimation, detection, and classification problems
- Matlab simulation of random experiments
- Identification of convex optimization problems
- Solution of optimization problems with Matlab

4. OBJECTIVES
Review of basic probability theory and introduction of random variable, correlation, and independence concepts
Knowledge of tools and principles of statistical signal processing
Matlab simulation of random experiments
Introduction to convex optimization problems
Solution of optimization problems with Matlab

6. COURSE ORGANIZATION	
CONTENTS	
1	Probability Theory
2	Unidimensional Random Variables
3	Function of a Random Variable and Asymptotic Theorems
4	Multidimensional Random Variables
5	Estimation of a Random Variable
6	Simulation of Random Experiments using Matlab. Includes an additional block of introduction to optimization problems

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
February Exam	Written exam	Yes	Yes	0,00
September Exam	Written exam	Yes	No	0,00
Written tests during the course	Written exam	No	Yes	70,00
Evaluation of the Laboratory	Work	No	Yes	30,00
TOTAL				100,00
Observations				
Continuous Evaluation requires to pass both the part based on problems (70%. Problems in regular classes) and the evaluation of the Lab Practices (30%. Problems and/or Homework). Otherwise, the evaluation would be exclusively based on the final exam.				
Observations for part-time students				
Part-time students can take the February or September exam				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
P. Z. Peebles Jr., Probability, Random Variables and Random Signal Principles, cuarta edición, McGraw-Hill, 2001.
A. Papoulis, Probability, Random Variables and Stochastic Processes, cuarta edición, McGraw-Hill, 2002.
H. Stark, J. W. Woods, Probability, Random Processes, and Estimation Theory for Engineers, 2ª edición, Prentice Hall, 1994.