

Program	09TT- Engineering in Telecommunication Technologies and Services
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Course number and name	
Number	95000016
Name	Random Signals Señales Aleatorias
Semester	Y2-S3

Credits and contact hours	
ECTS Credits	4.5
Contact hours	45

Coordinator's name	Mariano García Otero
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Specific course information		
Description of course content		
An introductory course in random signals, providing tools for the study of the signals appearing in communication systems. It contains three main parts: a) Probability Theory; b) Random Variables, and c) Random Processes.		
List of topics to be covered		
<ol style="list-style-type: none"> 1. Probability. 2. One random variable. 3. Multiple random variables. 4. Random signals and sequences. 		
Prerequisites or co-requisites		
None, but it is assumed that students have prior knowledge of the topics addressed in the first-year math courses (Calculus, Algebra and Vector Analysis). It is strongly recommended to take this course simultaneously with Signals and Systems (95000015).		
Course category in the program		
<input checked="" type="checkbox"/> R (required)	<input type="checkbox"/> E (elective)	<input type="checkbox"/> SE (selective elective)

Specific goals for the course	
Specific outcomes of instruction	
RA1: To know basic tools of probability theory for the analysis of random phenomena.	
RA2: To know how to work with random variables and their probabilistic descriptions.	
RA3: To acquire knowledge about the mathematical modeling of random signals.	

RA4: To know the effects of applying transformations to random signals, with special emphasis on linear transformations.

RA5: To be able to apply the tools provided by the course to the analysis of signals in communication systems.

Student outcomes addressed by the course

CECT4, CECT5
 CG1, CG2, CG5

Bibliography and supplemental materials

- Peyton Z. Peebles, Jr. Principios de Probabilidad, Variables Aleatorias y Señales Aleatorias, 4ª ed. Mc Graw-Hill, 2006.
- Hwei Hsu. Probability, Random Variables & Random Processes. McGraw Hill, 1997.
- X. Rong Li. Probability, Random Signals and Statistics. CRC Press, 1999.
- C. Alberola López. Probabilidad, Variables Aleatorias y Procesos Estocásticos. Universidad de Valladolid, 2004.
- Papoulis, S. U. Pillai. Probability, Random Variables, and Stochastic Processes, 4ª ed. McGraw-Hill, 2002.
- A. León-García. Probability and Random Processes for Electrical Engineering, 2ª ed. Addison Wesley, 1994.
- S. L. Miller, D. G. Childers. Probability and Random Processes with Applications. Elsevier, 2004.
- WEB: <http://moodle.upm.es/titulaciones/oficiales>

Teaching methodology

<input checked="" type="checkbox"/> lectures	<input checked="" type="checkbox"/> problem solving sessions	<input checked="" type="checkbox"/> collaborative actions	<input type="checkbox"/> laboratory sessions
Other:			