

Program	09TT- Engineering in Telecommunication Technologies and Services
----------------	---

Course number and name	
Number	95000064
Name	Electronic Instrumentation Instrumentación Electrónica
Semester	Y4-S7

Credits and contact hours	
ECTS Credits	6
Contact hours	60

Coordinator's name	Alfredo Sanz Hervás
---------------------------	---------------------

Specific course information		
Description of course content		
Introductory course on electronic instrumentation. It covers fundamental aspects of instrumentation such as measurement theory, description and properties of representative sensors and transducers, electronics for signal conditioning, electrical noise in circuits and virtual instrumentation.		
List of topics to be covered		
1. Introduction to electronic instrumentation. Uncertainty of a measurement; 2. Characteristics of transducers; 3. Signal conditioning; 4. Noise in instrumentation; 5. Examples of transducers; 6. Virtual instrumentation using LabView.		
Prerequisites or co-requisites		
None, although it will be assumed a basic knowledge in statistics, electronics, signal theory and computing.		
Course category in the program		
<input type="checkbox"/> R (required)	<input type="checkbox"/> E (elective)	<input checked="" type="checkbox"/> SE (selective elective)

Specific goals for the course
Specific outcomes of instruction
RA1: Understand the fundamentals of electronic instruments and instrumentation systems.
RA2: Be able to analyze the properties of transducers and electronic instruments.
RA3: Know the basic measurement techniques in telecommunication engineering.
RA4: Be able to develop basic measurement systems.

RA5: Know the principle of functioning of the commonest transducers in telecommunication engineering.

Student outcomes addressed by the course

CG1-13
 CEB2
 CE-SE3, CE-SE5, CE-SE7, CE-SE8

Bibliography and supplemental materials

- J. M. Vidal et al., *Instrumentación Electrónica*, ETSIT, 2013.
- M. A. Pérez García, et al., *Instrumentacion Electrónica*, Paraninfo S.A., 2004.
- W. Boyes (Ed.), *Instrumentation Reference Book*, Elsevier Science, 2003.
- E. E. Doebelin, *Sistemas de Medición e Instrumentación*, Mc. Graw Hill, 2005.
- P. H. Sydenham (Ed.), *Handbook of Measurement Science. Vol I. Theoretical Fundamentals*, John Wiley and Sons, 1.982.
- P. H. Sydenham (Ed.), *Handbook of Measurement Science. Vol II. Practical Fundamentals*, John Wiley and Sons, 1.983.
- P. H. Sydenham (Ed.), *Handbook of Measurement Science. Vol III. Elements of Change*, John Wiley and Sons, 1.992.
- *Guía para la Expresión de la Incertidumbre en la Medida*, Centro Español de Metrología, 2.000.
- <http://moodle.upm.es/titulaciones/oficiales/course/view?id=1214>

Teaching methodology

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