Last update: 06-05-2019

230088 - SSIS - Signals and Systems

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering

Teaching unit: 739 - TSC - Department of Signal Theory and Communications

Academic year: 2019

Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)

ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Salavedra Moli, Josep

Others:

FRANCESC VALLVERDÚ BAYÉS - ANTONI GASULL LLAMPALLAS - JOSEP SALAVEDRA MOLI - M. ASUNCION MORENO BILBAO - ELISA SAYROL CLOLS - CLIMENT NADEU CAMPRUBI - FRANCESC REY MICOLAU

Requirements

MATEL

Degree competences to which the subject contributes

Generical:

12 CPE N2. They will be able to identify, formulate and solve engineering problems in the ICC field and will know how to develop a method for analysing and solving problems that is systematic, critical and creative.

Teaching methodology

Theoretical classes as well as practical ones using Matlab

Learning objectives of the subject

Signals and systems in the time and frequancy domains

Study load

Total learning time: 150h	Hours large group:	52h	34.67%
	Hours small group:	13h	8.67%
	Self study:	85h	56.67%

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230088 - SSIS - Signals and Systems

Content

1. Introduction. Signals and systems in the time domain	Learning time: 36h Theory classes: 12h Laboratory classes: 4h Self study : 20h

Description:
Time-domain Signal Processing

2. Signals and systems in the frequency domain. The Fourier Transform	Learning time: 54h Theory classes: 20h Laboratory classes: 4h Self study : 30h

Description:
Fourier Transform of analog signals and systems. Sampling Theorem.

3. Fourier Transform of discrete-time signals. DFT	Learning time: 42h Theory classes: 14h Laboratory classes: 4h Self study : 24h

Description:
Fourier Transform of discrete-time signals. Discrete Fourier Transform (DFT)

4. Correlation function. Power Spectrum.	Learning time: 16h Theory classes: 4h Laboratory classes: 1h Self study : 11h

Description:
Correlation function and power spectrum.

Qualification system

Continuous assessment (40%)
Final exam (60%)
Students with an excellent continuous assessment are eligible to do not take the final exam and completing the course evaluation with a specific activity.

230088 - SSIS - Signals and Systems

Bibliography

Basic:

Haykin, S. S.; Van Veen, B. Señales y sistemas. Mexico D.F: Limusa, 2001. ISBN 9681859146.

García de Jalón, J.; Rodríguez, J.I.; Vidal, J. Aprenda Matlab 7.0 como si estuviera en primero [on line]. Madrid: Universidad Politécnica de Madrid. Escuela Técnica Superior de Ingenieros Industriales, 2005 [Consultation: 29/10/2012]. Available on: <http://mat21.etsii.upm.es/ayudainf/aprendainf/Matlab70/matlab70primero.pdf>.

Sayrol, E. [et al.]. Senyals i sistemes analògics: una introducció pràctica [on line]. 2a ed. Barcelona: Edicions UPC, 2002 [Consultation: 17/03/2015]. Available on: <http://hdl.handle.net/2099.3/36511>. ISBN 8483016109.

Mariño, J.B.; Vallverdú, F.; Rodríguez, J.A.; Moreno, A. Tratamiento digital de la señal: una introducción experimental [on line]. 3a ed. Barcelona: Edicions UPC, 1999 [Consultation: 19/02/2015]. Available on: <http://hdl.handle.net/2099.3/36344>. ISBN 8483012928.

Complementary:

Roberts, M.J. Señales y sistemas: análisis mediante métodos de transformada y MATLAB. México: McGraw Hill, 2005. ISBN 9701050673.

Oppenheim, A.V.; Willsky, A.S. Señales y sistemas. 2a ed. México: Prentice-Hall Hispanoamericana, 1997. ISBN 970170116X.