UNIVERSITÀ DI PAVIA

Anno Accademico 2019/2020

DIGITAL SIGNAL PROCESSING

Anno immatricolazione	2018/2019
Anno offerta	2019/2020
Normativa	DM270
SSD	ING-INF/03 (TELECOMUNICAZIONI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	ELECTRONIC ENGINEERING
Curriculum	Space Communication and Sensing
Anno di corso	2°
Periodo didattico	Primo Semestre (30/09/2019 - 20/01/2020)
Crediti	6
Ore	50 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	SAVAZZI PIETRO (titolare) - 6 CFU
Prerequisiti	Basic concepts in analog signal processing, spectral analysis and filtering.
Obiettivi formativi	Developing a strong working knowledge on signal processing algorithms for modeling discrete-time signals, designing optimum digital filters, estimating the power spectrum of a random signal, and designing and implementing adaptive filters. Ability to implement the studied algorithms in Matlab standalone and hardware-oriented applications.
Programma e contenuti	Introduction to digital signal theory. Discrete time signals, sampling theorem, linear shift invariant digital systems.

	Analysis of digital systems in the Fourier and Z transform domains. Discrete-time random processes. Digital filtering of deterministic and stochastic signals. Deterministic and stochastic signal modeling. Wiener Filter: linear prediction, white noise filtering, unwanted signal canceling. Adaptive filtering: LMS, RLS and Kalman algorithms. Spectrum estimation. Application examples in Matlab and programmable hardware platforms.
Metodi didattici	The course is based on lectures, practical exercises, case studies, and project examples, aimed at describing applications of statistical digital signal processing to practical utility projects. Lectures (hours/year in lecture theatre): 44 Practicals / Workshops (hours/year in lecture theatre): 8
Testi di riferimento	Monson H. Hayes Statistical Digital Signal Processing and Modeling. John Wiley & Sons Inc, 1996.
Modalità verifica apprendimento	The exam consists of an oral test during which questions will be asked on two/three different topics regarding the main course objectives, i.e., signal modeling, adaptive filtering, and spectrum estimation, in order to cover most of the course topics. Alternatively, each student can choose to implement a laboratory project, assigned by the teacher, followed by an in-depth interview. The assigned projects will cover most of the course topics. The final mark is in thirtieths.
Altre informazioni	
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile