Login

Politecnico di Torino

Academic Year 2008/09 (first time established in A.Y.2007/08)

02JSGJA

Digital Communications

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (II FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability

SSD	CFU	Activities	Area context
ING-INF/03	5	B - Caratterizzanti	Ingegneria delle telecomunicazioni

Objectives of the course

The goal of this teaching unit is to deepen the study of digital communication systems and provide knowledge on information and detection theories.

Expected skills

At the end, the student will be able to understand the detailed structure of a digital transceiver and to estimate the losses due to system impairments.

Prerequisites

Basic knowledge on calculus, linear algebra, probability theory, stochastic processes, analog signal theory, electrical communications.

Syllabus

'h Digital signals, Z-transform, design of FIR and IIR filters.
'h Detection theory. Optimum receiver.
'h Information theory. Digital channel capacity.
'h Digital transmission on narrowband channels, intersymbol interference, First Nyquist criterion, equalization, Viterbi algorithm.
'h Digital radio-frequency modulations: equivalent baseband system. DPSK, MSK, GMSK, OFDM

Laboratories and/or exercises

Theory and practice classes will alternate. Practice classes will be devoted to the application of theoretical methods to typical transmission systems in order to evaluate their performance.

Bibliography

Handouts.
J.G.Proakis i§Digital Communicationsi¨ Mc-GRaw-Hill 1995
S.Benedetto, E.Biglieri, V.Castellani i§Digital Transmission Theoryi¨ Prentice-Hall 1987

Revisions / Exam

Oral exam with an optional project to be developed on a personal computer.

Programma definitivo per l'A.A.2008/09

BACK

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