

TS113 : Digital communications

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T6-B Signal et communications

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ECTS credits :

2.50

Evaluation :

S1: ET(1h30,E,sd,sc) x0.7 + CC(CR TP) x0.3; S2: ET(1h30,E,sd,sc) x1

Number of hours :

Lecture :	2.66
Combined lecture and tutorial classes :	16.00
Tutorial classes :	8.00
Individual work :	12.00

Teacher(s) :

FERRE Guillaume
TAJAN Romain
TESSON Patrice

Title :

Digital communications

Abstract :

The Digital Communications modules supplement the networks and electronics modules in the training of wireless networks (WiFi, WIMAX), TV broadcasting systems (DVB-T, DVB-S) and cellular systems (GSM, GPRS, UMTS). This teaching applies the concepts acquired in 1st year to the field of telecommunications. At the end of the course, students should be able to identify the basic functions fulfilled in all the modems used in the communications systems. This course approaches the following points: digital modulations (PAM, PSK, QAM, FSK), architecture of the receivers in the case of AWGN channels. The approach of this course is voluntarily theoretical. The comprehension of the theoretical aspects of digital communications constitutes the appreciation of an engineer compared to a high-level technician.

Plan :

1. Introduction
2. Introduction to random signals
3. Principle of a base band digital communications
4. Power spectral density of a digital communications signal
5. Optimal receiver, theoretical performance on AWGN channel
6. Digital modulators/demodulators

Prerequisite :

Signal Processing, Stochastic Processes and Random Variables

Document(s) :

Polycopiés de cours, polycopiés de TD et TP

Keyword(s) :

Modulations, AWGN Channels, Band Limited Channels, Matched Filter, Nyquist Criterion, power spectral density