Telecommunications

Semester
Fall

In brief

Course langage: French

Presentation

Learning objectives

At the end of this course, students will be able to understand the concepts of information and their usefulness for coding and telecom, to master the basic principles of processing optimization for telecommunications, to learn to question the choice of system, methods and architecture and to know how to integrate processing methods into reliable and economical hardware architectures. They will also be able to develop a strategic vision and know how to implement it.

Description of the programme

Technological requirements and economic pressure have led telecommunications systems to develop and use the most advanced methods for their design, operation and maintenance. The common objective is the transmission and processing of information: these systems come in many forms more or less close to the end user. The information flow has taken the main place in this field, whose visible face is the development of the Internet and the very high speed, but to which we must add the new generations of data base backup systems. The main goal of this course is to deepen several aspects (information theory, estimation, detection...) related to telecommunications and their evolution. This course will allow students to understand the fundamental mechanisms of telecommunications: to know the best systems and devices available for emitting, transmitting and receiving a signal or information, to choose the signal or information processing techniques that optimize these operations, and to know how to integrate these methods into reliable and economical hardware architectures.

Generic central skills and knowledge targeted in the discipline

To enable the generalist engineer to identify the problems that may arise in signal processing and information theory for telecommunications, and to provide him/her with the essential elements of this field which constitutes one of the foundations of

digital technologies. To acquire the principles of a scientific approach and the new and specific techniques whose industrial and societal applications are in full expansion.

How knowledge is tested

Continuous assessment: average of a report and a written exam

Bibliography

– L.L. Scharf, Statistical Signal Processing - Detection, Estimation and Time Series Analysis, Addison-Wesley, 1991
– H. Van Trees, Detection, Estimation and Modulation Theory, John Wiley and Sons, 1968 (tomes 1, 2 et 3)
– G. Battail, Théorie de l'information - Application aux techniques de communication, Masson,1997

Teaching team

Salah Bourennane

Sustainable Development Goal

Sustainable cities and communities

Climate action

Life on land

Total des heures		**30h**
CM	Master class	24h
TD	Directed work	6h

Useful info

Name responsible for EU

Lead Instructor

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