ISN	S8	En

UE – information transmission	Valerie Louis dorr
EC – information transmission	Valerie Louis dorr, didier Wolf, radu ranta Steven le cam, Maya Kallas

- ***Objectifs***

Understand the fundamentals of information theory and their implementation in digital data transmission, baseband, and x-state quadrature transpose xQAM. The modeling of transmission media is covered as well as the format and coding of data
Amount of information, entropy of a source, joint entropy of 2 sources, entropy of Markovian sources
Source coding notions of compression, adaptation of the source to the channel

- ***Compétences acquises***

The course provides an understanding of the concepts and tools of digital data information transmission across all media in the physical layer. It also addresses the notion of information measurement.

- ***Prérequis***

1st year Analog and Digital Electronics and 2A Signal Processing courses.

- ***Programme pédagogique CM : 16h TD : 2h TP : 12h***

Amount of information, entropy of a source, joint entropy of 2 sources, entropy of Markovian sources
- Source coding: coding technique, compression concepts, adaptation of the source to the channel
- Channel coding : coding technique
- Modeling of transmission media
- Non-linear quantization
- Format and coding of data Valence, modulation speed, rate
- Power spectral density of digital transmissions Inter symbol interference, Nyquist filter, phase path,
- x-state modulation xQAM,
- Practical work
- Huffman coding
- Phase locked loop
- QAM 16 modulation in a wireless transmission channel with noise

- ***Evaluation***

Exam and lab reports