

5.0 credits	30.0 h + 30.0 h	2q
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Teacher(s) :	Vandendorpe Luc ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Identical to the contents of the course
Aims :	<p>At the end of this lecture, the students should be able to :</p> <ul style="list-style-type: none"> - Understand and explain the performances of the main systems transmitting either analog or digital information (like for instance AM radio, FM, ADSL, digital TV, WIFI, satellite communications, etc...) - Understand, use and dimension the main modulation techniques - Model and simulate (taking into account implementation aspects) transmission systems. <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Content :	<ul style="list-style-type: none"> - Basic of random signals and stochastic processes ; stationnarity, power spectral density - Signals : speech, audio, image, video, data - Noise sources and types (thermal, shot, impulsive) - Signals and systems : analytic signal, complex envelope, random signals - Decibels - Analog modulations : DSB (SC), SSB, VSB, demodulation, effect of noise, frequency change - Angular modulations : FM (narrowband and wideband), demodulation, noise effect, capture, threshold effect - Superheterodyne receiver - Baseband transmission, line codes, matched filter, correlation, noise effect, Nyquist criterion, carrierless amplitude/Phase modulation - Passband transmission : linear modulations, spectral efficiency - Discrete time simulation of a communication chain - Time Multiplexing - Error correcting codes : block codes, convolutional codes, hard decoding, soft decoding
Other infos :	<p>Teaching and learning methods :</p> <p>Learning shall be based on theoretical courses interleaved with practical training (possibly MATLAB sessions) and laboratories</p> <p>Pre-requisite :</p> <p>FSAB 1106</p> <p>Evaluation :</p> <p>Based on an examination possibly with course notes</p>
Cycle and year of study :	<p> > Bachelor in Engineering > Bachelor in Computer Science > Bachelor in Mathematics > Master [120] in Mathematical Engineering > Master [120] in Electrical Engineering > Master [120] in Electro-mechanical Engineering </p>
Faculty or entity in charge:	ELEC