UCLouvain

lelec1930

2023

Intoduction to telecommunication

4.00 credits	30.0 h + 15.0 h	Q2

Teacher(s)	Louveaux Jérôme ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	Basic knowledge in electricity (circuits) and mathematics (Fourier transform). *The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	• Signals used in telecommunications • Propagation • Modulations • Telecommunications systems (GSM/3G/4G, Wifi, xDSL) • Error correcting codes • Cryptography
Learning outcomes	**At the end of this learning unit, the student is able to :** AA1.1, 1.3, 5.2 **At the end of the course, the student will be able to :** 1 • Describe the various signal formats used in major telecommunications systems. • Understand and explain the main characteristics of a communication channel (wired or wireless). • Perform a simple link budget. • Understand and explain the basic modulation schemes (digital and analog). • Understand and explain the basic concepts used in some common communication systems : GSM/3G/4G, Wifi, xDSL. • Understand, explain and compute the basics characteristics of error correcting codes. • Identify and describe the basic elements of a simple communication scheme.
Evaluation methods	The exam is individual and written. The questions are based on the material taught during the courses and focus on the understanding and ability to explain the various concepts (as opposed to pure memorization). The exam duration is around 2 hours. No document is allowed but a calculator is recommended.
Teaching methods	The course contains • 12 lecture sessions. • 5 exercice sessions.
Content	- Introduction : signals in telecommunications - Basis of line theory ; description of most common cables - Propagation, antennas and link budget - Analog modulations (AM, FM) - Digital modulations