UCLouvain

lelec1930

2019

Intoduction to telecommunication

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

4 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
Aims	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. - - - - *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".*
Evaluation methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** The exam is individual and written. The questions are based on the objectives described above and focus on the understanding and ability to explain the various concepts taught during the course (as opposed to pure memorization). The exam duration is around 3 hours.
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** The course contains • 14 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 - TV and radio systems - Error correcting codes - Data compression - Mobile communications (GSM,3G, LTE, Wi-fi) - xDSL
Inline resources	Moodle web site https://moodleucl.uclouvain.be/course/view.php?id=9427

Bibliography	Transparents disponibles sur Moodle
Faculty or entity in charge	ELEC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Electro-mechanical Engineering	ELME2M	4		
Bachelor in Computer Science	SINF1BA	5	LINFO1140	
Minor in Scientific Culture	LCUSC100I	4		