




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.

5 credits

30.0 h + 30.0 h

Q2

Teacher(s)	Vandendorpe Luc ;
Language :	French
Place of the course	Louvain-la-Neuve
Aims	<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>
Evaluation methods	<p><b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b></p> <p>About the lectures, the students are evaluated on individually with respect to the particular objectives stated above. The examination is "closed books".</p> <p>Laboratories are subject to individual evaluation.</p> <p>A continuous evaluation may be conducted on the basis of homeworks to be submitted during the year.</p>
Teaching methods	<p><b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b></p> <p>The lectures are organized as follows:</p> <p>14 séances de cours</p> <ul style="list-style-type: none"> <li>• 14 lecturing sessions</li> <li>• 9 session of practical training/monitored exercises (solutions are provided later on on Moodle)</li> <li>• laboratory sessions about AM and FM modulations.</li> </ul>
Content	<ul style="list-style-type: none"> <li>• Signals : speech, audio, images, video, data</li> <li>• Signals and systems : analytic signal, complex envelope, random signals, stationnarity, power spectral density</li> <li>• Decibels</li> <li>• Analog modulations : DSB (SC), SSB, VSB, demodulation, noise impact, change of frequency,</li> <li>• Angular modulations : FM (narrow band and wideband), demodulation, effect of noise, capture, threshold effect</li> <li>• Superheterodyne receiver</li> <li>• Baseband transmission : line code, matched filter, correlation, noise effet, Nyquist criterion, Carrierless amplitude/phase modulation</li> <li>• Passband transmission : linear modulations (QAM, PSK), spectral efficiency</li> <li>• Discrete time simulation of a communication link</li> <li>• Time and frequency multiplexing</li> <li>• Error correcting codes: block codes, convolutional codes, hard decoding and soft decoding</li> </ul>
Inline resources	<a href="http://moodleucl.uclouvain.be/course/view.php?id=2503">http://moodleucl.uclouvain.be/course/view.php?id=2503</a>
Bibliography	<ul style="list-style-type: none"> <li>• Syllabus de cours disponible sur Moodle</li> <li>• Transparents disponibles sur Moodle</li> <li>• Livre de référence disponible à la BST (Communications systems, S. Haykin, Wiley)</li> <li>• Enregistrement des cours disponibles en podcast</li> </ul>
Faculty or entity in charge	ELEC

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Mathematical Engineering	<a href="#">MAP2M</a>	5		
Minor in Engineering Sciences: Electricity (only available for reenrolment)	<a href="#">LELEC100I</a>	5		
Minor in Electricity	<a href="#">LFSA133I</a>	5		
Specialization track in Electricity	<a href="#">LELEC100P</a>	5		