

Due to the COVID-19 crisis, the information below is subject to change, in particular that concerning the teaching mode (presential, distance or in a comodal or hybrid format).




5 credits	30.0 h + 30.0 h	Q2
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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> <p>The weighting between these elements may be changed depending on the sanitary conditions.</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 (face to face, remotely, by means of podcasts or combination of these 3 modes, depending on the sanitary situation)</li> <li>• 9 sessions of practical training/monitored exercices (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

### Force majeure

Teaching methods	<p>If the sanitary situation allows it, courses, exercise classes and monitoring of laboratory sessions will be held in presence.</p> <p>Otherwise, courses, exercise classes and monitoring of laboratory sessions will be organised on line, or in comodal format.</p> <p>Students may also be invited to watch podcasts.</p>
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Evaluation methods	<p>The evaluation will address subjects covered in the courses, the podcasts and the exercise classes. The laboratories will also be evaluated.</p> <p>The examination will be written, individual, and composed of open questions.</p> <p>If the sanitary situation allows it, the examination will be on campus and no material will be allowed.</p> <p>If the situation requires the examination to be organised on line, then it will be an open book examination.</p> <p>The students will also be evaluated by group and orally about the laboratories. Depending on the sanitary conditions, this evaluation will be held in presence or remotely. It will consist in a student presentation followed by questions.</p>
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<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Aims
Specialization track in Electricity	<a href="#">FILELEC</a>	5		
Minor in Electricity	<a href="#">LMINOELEC</a>	5		
Minor in Engineering Sciences: Electricity (only available for reenrolment)	<a href="#">MINELEC</a>	5		
Master [120] in Mathematical Engineering	<a href="#">MAP2M</a>	5		