

4.0 credits

30.0 h + 15.0 h

2q

|                      |   |
|----------------------|---|
| Teacher(s) :         | Louveaux Jérôme ;   |
| Language :           | Français  |
| Place of the course  | Louvain-la-Neuve  |
| Inline resources:    | <a href="http://icampus.uclouvain.be/claroline/course/index.php?cid=ELEC2930_001">http://icampus.uclouvain.be/claroline/course/index.php?cid=ELEC2930_001</a>   |
| Prerequisites :      | Basic knowledge in electricity (circuits) and mathematics (Fourier transform).  |
| Main themes :        | --<br>Signals used in telecommunications<br>--<br>Propagation<br>--<br>Modulations<br>--<br>Telecommunications systems (GSM/3G/4G, Wifi, xDSL)<br>--<br>Error correcting codes<br>--<br>Cryptography  |
| Aims :               | AA1.1, 1.3, 5.2<br>At the end of the course, the student will be able to :<br>--<br>Describe the various signal formats used in major telecommunications systems.<br>--<br>Understand and explain the main characteristics of a communication channel (wired or wireless).<br>--<br>Perform a simple link budget.<br>--<br>Understand and explain the basic modulation schemes (digital and analog).<br>--<br>Understand and explain the basic concepts used in some common communication systems : GSM/3G/4G, Wifi, xDSL.<br>--<br>Understand, explain and compute the basics characteristics of error correcting codes.<br>--<br>Identify and describe the basic elements of a simple communication scheme.<br><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 : | 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 :   | The course contains<br>14 lecture sessions.<br>3 exercice sessions.   |
| Content :            | - Introduction : signals in telecommunications<br>- Basis of line theory ; description of most common cables<br>- Propagation, antennas and link budget<br>- Analog modulations (AM, FM)<br>- Digital modulations<br>- TV and radio systems<br>- Error correcting codes<br>- Data compression<br>- Cryptography<br>- Mobile communications (GSM,3G, Wi-fi)<br>- xDSL  |

|                              |  |
|------------------------------|--|
| Bibliography :               | Slides available on iCampus  |
| Cycle and year of study :    | <ul style="list-style-type: none"> <li>&gt; <a href="#">Bachelor in Information and Communication</a></li> <li>&gt; <a href="#">Bachelor in Philosophy</a></li> <li>&gt; <a href="#">Bachelor in Pharmacy</a></li> <li>&gt; <a href="#">Bachelor in Computer Science</a></li> <li>&gt; <a href="#">Bachelor in Economics and Management</a></li> <li>&gt; <a href="#">Bachelor in Motor skills : General</a></li> <li>&gt; <a href="#">Bachelor in Human and Social Sciences</a></li> <li>&gt; <a href="#">Bachelor in Sociology and Anthropology</a></li> <li>&gt; <a href="#">Bachelor in Political Sciences: General</a></li> <li>&gt; <a href="#">Bachelor in History of Art and Archaeology : General</a></li> <li>&gt; <a href="#">Bachelor in Mathematics</a></li> <li>&gt; <a href="#">Bachelor in History</a></li> <li>&gt; <a href="#">Bachelor in Biomedicine</a></li> <li>&gt; <a href="#">Bachelor in religious studies</a></li> <li>&gt; <a href="#">Master [120] in Electro-mechanical Engineering</a></li> </ul> |
| Faculty or entity in charge: | ELEC   |