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| 5.0 credits | 30.0 h + 30.0 h | 1q |
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| Teacher(s) :                 | Pardoen Thomas ; Francis Laurent (coordinator) ; Raskin Jean-Pierre ; Flandre Denis ;  |
| Language :                   | Français   |
| Place of the course          | Louvain-la-Neuve   |
| Main themes :                | See "main themes"  |
| Aims :                       | At the end of the course the students will be able to:<br>. design MEMS including the sensor, transducer as well as associated electronics,<br>. use of unnumerical and analytical multi-physics simulation tools for designing and optimizing the microsystem performance,<br>. take into account the packaging and test issues at early stage of the MEMS design<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> |
| Content :                    | 1. Approach to MEMS design<br>2. Transduction principles<br>3. Sensors and actuators : electrical, mechanical, thermal, optical, (bio)chemical, etc.<br>4. Co-integration MEMS-CMOS electronics<br>5. Low-power low-noise read-out electronics<br>6. Interconnection (electrical as well as fluidic) and packaging<br>7. Multi-physics simulation tools and characterization<br>8. Reliability issues  |
| Other infos :                | Teaching methods:<br>About 8 classroom lectures will be given for providing the theoretical background. Afterwards the students will make a project in groups of 2-3 students depending on the chosen subjects related to the design of MEMS or NEMS.<br><br>Prerequisites:<br>Basic knowledges in electronics, solid-state physics, material science and chemistry as well as micro and nanofabrication   |
| Cycle and year of study :    | <a href="#">&gt; Master [120] in Electrical Engineering</a><br><a href="#">&gt; Master [120] in Electro-mechanical Engineering</a><br><a href="#">&gt; Master [120] in Chemical and Materials Engineering</a><br><a href="#">&gt; Master [120] in Physical Engineering</a>   |
| Faculty or entity in charge: | ELEC   |