

5.0 credits	30.0 h + 30.0 h	2q
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Teacher(s) :	Raskin Jean-Pierre ; Bayot Vincent (coordinator) ; Flandre Denis ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<p>Establish physical bases of electronics : band structure, phonons, charge transport equations and carrier generation and recombination mechanisms.</p> <p>Study physical behaviour and establish first-order models in static and low-frequency small-signal operation, for the three basic electronics devices : PN junction, bipolar transistor and MOS transistor</p>
Aims :	<p>After this course students will be able to</p> <ul style="list-style-type: none"> <li>- explain physical electronics bases and use them to solve simple problems in semiconductor physics</li> <li>- show first-order physical understanding of the behaviours and modellings of basic semiconductor devices, towards their exploitation in the courses of the Electronics module and following courses in Semiconductor devices</li> </ul> <p><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></p>
Content :	<p>Theoretical lectures, hands-on laboratories, APPs and APEs. Some parts of the course are introduced through APP activities (projects), other parts introduce theoretical concepts first and apply them in APE next (exercices).</p> <p>Hands-on labs propose to characterize the devices under study and confort experimental data with theoretical models or calculations. The approach implies a significant discussion of experiments vs theory and the critical validation of necessary simplifying hypotheses and approximations.</p>
Other infos :	<p>Prerequisites :</p> <p>Quantum mechanics</p> <p>Assessment :</p> <p>Written exam with a theoretical part and an exercices part. The theoretical part includes questions of development and understanding of concepts. The exercices are similar to those done in APP and APE problems</p>
Cycle and year of study :	<p><a href="#">&gt; Bachelor in Engineering</a></p> <p><a href="#">&gt; Master [120] in Physical Engineering</a></p>
Faculty or entity in charge:	ELEC