

6.0 credits	0 h + 60.0 h	2q
-------------	--------------	----

Teacher(s) :	Sobieski Piotr (compensates Francis Laurent) ; Louveaux Jérôme (compensates Francis Laurent) ; Louveaux Jérôme ; Francis Laurent ; Janvier Danielle ; Sobieski Piotr (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	> /www.icampus.ucl.ac.be/FSAB1502/
Prerequisites :	Pre-requisite : Mathematics (FSAB 1101) and Physics (FSAB 1201) courses of semester Q1
Main themes :	<p>Main themes The project is organized in several steps: 1. Specification of the global function of a circuit in view of an intended application and workstatement 2. Basic blocs and overall architecture definition 3. Analysis of subparts of the circuit, typically a sensor, by measuring received or obtained signals, along with its theoretical analysis, basic modelling in the context of Physics 4. Global analysis of the circuit: understanding of each function/bloc, interfaces, 5. Basic tests on the circuit prototype 6. Experimental identification of the device characteristics, prototype finalization, PCB production and mounting 7. Comparisons of measured results with performed modelization, critical analysis of quality and adequacy of basic modelling 8. Experimental parametric analysis of several components, limitation of the prototype, of the modelization and of the chosen implementation, evaluation tests</p>
Aims :	<p>Aims Content oriented disciplinary aims integrated to the project: At the end of the project P2, students will be able to " apply new knowledge in physics: understand and calculate basic elements appearing in electrical circuits (sources, resistors, capacitors, inductances,...), understand basic behaviour of electrical circuits, as well as energy and power related concepts " apply new knowledge in chemistry (materials): understand the characteristics of conductors, dielectrics and magnetic materials " derive a simplified mathematical model (function) from laboratory measurements " modelize the behaviour of an electrical circuit or elements and to realize a prototype devoted to a specific function " compare experimental results with a mathematical modelling " use basic subsets of software tools: Eagle for PCB drawing, Matlab®, etc.. Basic methodological aims: The project intends the student develop the following transverse skills, being able to: 1. work in team in order to execute a engineering type project 2. solve a multidisciplinary problem 3. practice scientific and reflexive research 4. efficiently practice oral communication 5. efficiently practice written communication 6. auto-evaluate himself in view of foreseen educational goals (autodidaxy). These skills will be progressively developed cumulatively and with a deepening progression among the three projects FSAB1501, FSAB1502 and FSAB1503. The progression of the development of these transversal skills during the 3 projects as well as a description of the corresponding successive steps is presented on the following link, where the six previous general skills to be reached are detailed more specifically (link vers la page française).</p> <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>
Evaluation methods :	<p>The final mark consists (under the condition that the individual mark is sufficient) within:</p> <p>A group mark (2/3) for the final report , the final presentation by the group in front of the jury, the continuous evaluation of the group work during the semester, and the question answered by the group to the jury.</p> <p>An individual mark (1/3) based on a written exam during the exam period and on the content each student is supposed to acquire during the work.</p> <p>The evaluation grids are made available to students all along the semester to allow them to anticipate and prepare their evaluation. After the final presentation and the deliberation of the jury, an immediate debriefing of the activity and of the evaluation is foreseen between the students group, his tutor and the jury.</p>
Content :	<p>Content and teaching methods Building on the brilliant initiative and interest of new students in a practical and funny realization, the P2 project has, as main objective, to invite them to discover new concepts and techniques, and also to reinforce old ones, too rapidly surfed or not sufficiently applied. It will be an encounter point for the various objectives of the semester, in a unique realization. Practical realization and laboratory experiments are the basic methodological components of the project, which will lead to a specific circuit design and validation.</p>
Cycle and year of study :	> Bachelor in Engineering
Faculty or entity in charge:	BTCI

