UCLouvain

lelec1101

2019

Project in Electricity 1 : Electrical circuits

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

5 credits	30.0 h + 30.0 h	Q2

Teacher(s)	Craeye Christophe ;Dehez Bruno ;Oestges Claude (coordinator) ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	This project deals with the design, the simulation and the measurement of small electrical circuits implementing resistors, capacitors, inductors, operational amplifiers and sources. It is also strongly coupled with the course LELEC1370 (Measurements and Electrical Circuits).
Aims	**Contribution of the course to the program objectives (N°)** Axis 1 (1.1, 1.2, 1.3), Axis 2 (2.1, 2.2, 2.3, 2.4, 2.5), Axis 4 (4.1, 4.2, 4.4), Axis 5 (5.2, 5.3, 5.4, 5.5), Axis 6 (6.1, 6.3) **Specific learning outcomes of the course** At the end of the course, the student will be able to : 1 • Design electrical circuits consisting of several functional blocks and implementing resistors, capacitors, inductors, operational amplifiers and sources, on the basis of new knowledge acquired in the field of electricity, especially through the course LELEC1370 (Measurements and Electrical Circuits) • Model such circuits (functional block by functional block and globally) in order to size its components • Simulate these circuits (functional block by functional block and globally) using specialized software (LTSpice) • Build and test these circuits using standard measuring devices • Compare simulations and experimental results and interpret differences • Propose alternative solutions to the proposed circuits, based on a detailed argumentation • Establish the limits of validity of a model • Apply a system design approach by functional blocks • Present the results of a group project through a written report and an oral demonstration. - - - - *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".*
Evaluation methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Students are evaluated continuously during the semester. The evaluation is based on the work done during the laboratory activities, the final report, the final presentation/demonstration of the work, and on a written individual examination.
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Teaching consists in a project performed in groups of 4 to 6 students. The project involves the development of an electrical circuit implementing resistors, capacitors, inductors, operational amplifiers and sources. Examples include the development of an AM radio receiver, a precision balance or an active magnetic suspension.
Content	The project is punctuated by classroom sessions, problems to solve autonomously and by supervised laboratory activities in close connection with the project. The project ends with the presentation of a synthesis report and a demonstration/presentation of the developed system.
Inline resources	Moodle http://moodleucl.uclouvain.be/course/view.php?id=8941
Bibliography	• Enoncé du projet, corrections et informations pratiques sur Moodle. • Support du cours lié (LELEC1370): Engineering Circuit Analysis, J.D. Irwin & R.M. Nelms, éd. J. Wiley and Sons, 2011
Other infos	The participation in this project needs having acquired the basic concepts of electricity dispensed through the courses LFSAB1201 (Physics 1) and LFSA1502 (Project 2).

Faculty or entity in charge	ELEC

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Minor in Engineering Sciences: Electricity (only available for reenrolment)	LELEC100I	5		
Minor in Electricity	LFSA133I	5		
Specialization track in Electricity	LELEC100P	5		