LELEC2660

2014-2015

Power electronics

4.0 credits	30.0 h + 15.0 h	1q

Teacher(s) :	Bekemans Marc ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	> http://icampus.uclouvain.be/claroline/course/index.php?cid=ELEC2660
Main themes :	-- Theory of electrical circuits -- Semiconductor physics -- Automatic control -- Thermal behaviour -- Magnetics in the frame of energy conversion and motor control with power semiconductor switches
Aims :	- AA1.1, AA1.2, AA1.3, - AA2.1, AA2.3, AA2.5, - AA3.2, AA3.3, - AA5.4, AA5.5 More precisely at the end of the course students will be able to -- determine the electrical quantities inside a converter and at its terminals for DC-DC converters, inverters and rectifiers -- evaluate the electrical and thermal stresses of active and passive components in power electronic converters -- build and make use of the small signal model of a converter (in particular of a DC-DC converter) -- size the main components of a converter on the basis of specifications and -- use an Excel file for sizing a converter -- use a power electronic converter as a control device *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 :	Assesment of the practical work on the basis of reports issued by groups of 3 to 4 students (simulation and sizing of converters), (25 % of the final note), Written assesment without documentation (75 % of the final note) with a duration of 3 hours
Teaching methods :	- lectures - tutored solving in groups of problems (simulation and sizing of converters) posted on iCampus - use of softwares (Simulink, Pspice, Excel')
Bibliography :	- Slides on iCampus - G séguier, et al "Electronique de puissance" (9ème édition), Dunod, Paris
Cycle and year of study :	> Master [120] in Electrical Engineering > Master [120] in Electro-mechanical Engineering
Faculty or entity in charge:	ELEC