UCL Université catholique de Louvain

LELEC2660

2015-2016

Power electronics

4.0 credits	30.0 h + 15.0 h	1q

Teacher(s) :	Bekemans Marc ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	Moodle > http://moodleucl.uclouvain.be/course/view.php?id=8136
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 :	With respect to the AA referring system defined for the Master in Electrical Engineering, the course contributes to the development, mastery and assessment of the following skills : -- 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 :	References : - Fundamentals of Power Electronics, Robert W. Erickson ISBN 0-412-08541-0 - Electronique de Puissance 10ème édition, G. Séguier, F. Labrique, Ph. Delarue, ISBN 978-2-10-073866-3 - Composants à semi-conducteur pour l'électronique de puissance, S. Lefevre, F. Miserez, ISBN 2-7430-0719-2 - Slides on Moodle

Faculty or entity in charge:	ELEC

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Electrical Engineering	ELEC2M	4	-	
Master [120] in Electro-mechanical Engineering	ELME2M	4	-	