UCLouvain

lelec2311

2018

Physics of Electromechanical Converters

4 credits	30.0 h + 15.0 h	Q2

Teacher(s)	Dehez Bruno ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	- Structure and working principle of the magnetically coupled devices (electromechanical converters, magnetic bearings, magnetic coupling and gears, ...) - Modelling (local/global, electric/magnetic/thermal, numerical/analytical) of these devices - Optimization of these devices
Aims	In consideration of the reference table AA of the program "master in electrical engineering ", this course contributes to the development, to the acquisition and to the evaluation of the following experiences of learning: • AA1.1, AA1.2, AA1.3 • AA5.6 • AA6.1, AA6.4 **Specific learning outcomes of the course** 1 At the end of the course, the student will be able, based on thetechnical andscientific literature,to : - Understand the working principle of any magnetically coupled devices (electromechanical transducers, magnetic bearings, and magnetic coupling gear, ...) - Establish the magnetic, electrical and thermal (elementary) model of such devices - Use these models to analyse and predict the behaviour of such devices - Use these models to size or optimize these devices according to given specifications In addition, he/she will also be able to: - Perform a bibliographic search in scientific literature - Perform a critical reading of a scientific article - - - - *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	- Preparation and presentation, during the semester, of a thematic seminar by groups of 2-3 students (50%) - Oral examination on the seminars presented by the other students (50%)
Teaching methods	- Thematic seminars prepared and presented by groups of 2-3 students - Question-answer and restructuring sessions organized following each thematic seminar - Guidance sessions organized in groups every week during the three weeks preceding the presentation of the thematic seminar
Content	-The contentvaries from one year to another, and depends on the collection of scientific articles selected for the thematic seminars
Inline resources	Moodle http://moodleucl.uclouvain.be/course/view.php?id=8989
Bibliography	Collection de 14 articles ou groupes d'article en lien avec les thèmes du cours
Faculty or entity in charge	ELEC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Electro-mechanical Engineering	ELME2M	4		
Master [120] in Electrical Engineering	ELEC2M	4		