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| Teacher(s) | Dehez Bruno ; |
| Language : | English > French-friendly |
| Place of the course | Louvain-la-Neuve |
| Prerequisites | Students are expected to master the following skills: basic knowledge in eletromagnetism and electrical machines, as they are covered within the courses LELEC1755 and LELEC1310 |
| Main themes | <ul style="list-style-type: none"> • 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 |
| Learning outcomes | <p>At the end of this learning unit, the student is able to :</p> <p>In consideration of the reference table AA of the program "Master in Electro-mechanical Engineering, professional focus in Mechatronics", this course contributes to the development, to the acquisition and to the evaluation of the following experiences of learning:</p> <ul style="list-style-type: none"> • AA1.1, AA1.2, AA1.3 • AA5.6 • AA6.1, AA6.4 <p>Specific learning outcomes of the course:</p> <p>At the end of the course, the student will be able, based on the technical and scientific literature, to :</p> <p>1</p> <ul style="list-style-type: none"> • 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 analyze and predict the behavior of such devices • Use these models to size or optimize these devices according to given specifications <p>In addition, he/she will also be able to:</p> <ul style="list-style-type: none"> • Perform a bibliographic search in scientific literature <p>Perform a critical reading of a scientific article</p> |
| Evaluation methods | <p>Students will be evaluated on the basis of:</p> <ul style="list-style-type: none"> • The preparation and the presentation of the thematic seminar; • The presentation and the report of the project; • A closed book oral exam focusing on the content of the thematic seminars. <p>The final grade is the arithmetic average of the grades obtained for these three assessments.</p> <p>The grades awarded for the seminar and project may be individualised according to the student's involvement in the group during the semester (active participation in guidance/consultation sessions) or the mastery by the student shown during presentations.</p> |
| Teaching methods | <p>Teaching is organized in the form of:</p> <ul style="list-style-type: none"> • Thematic seminars dealing with the content of one or more scientific papers. These seminars are prepared and presented in groups of 2 or 3 students. They are preceded by guidance sessions organized each week during the three weeks preceding the presentation of the thematic seminar. They are followed by a question-answer and restructuring session. • A project on the modeling and optimisation of an electromechanical converter. This assignment is carried out in groups of 2 or 3 students and leads to a report and/or a presentation. |
| Content | The content varies from one year to another, and depends on the collection of scientific papers selected for the thematic seminars |
| Inline resources | Moodle |

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| | https://moodle.uclouvain.be/course/view.php?id=1897 |
| Bibliography | Collection d'articles en lien avec les thèmes du cours. |
| Faculty or entity in charge | ELME |

| Programmes containing this learning unit (UE) | | | | |
|--|------------------------|---------|--------------|---|
| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Master [120] in Electrical Engineering | ELEC2M | 5 | |  |
| Master [120] in Electro-mechanical Engineering | ELME2M | 5 | |  |
| Master [120] in Energy Engineering | NRGY2M | 5 | |  |