UCLouvain

lmeca2420

2018

Advanced topics in energetics.

3 credits	30.0 h	Q2

Teacher(s)	Bartosiewicz Yann ;Jeanmart Hervé ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	• Advanced technologies for the transformation of primary energy. • Elements for a technological prospective in energy. • Environmental, societal, ethical aspects of energy
Aims	In consideration of the reference table AA of the program "Masters degree in Mechanical 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 • AA2.3, AA2.4, AA2.5 • AA3.1, AA3.2 • AA5.2, AA5.3, AA5.6 1 • AA6.1, AA6.2 • Introduce to the most recent developments in the field of energy systems. • Give access to the students to the present technical literature in the field. • Show the impact of technical, environmental, social constraints on the evolution of energy technologies. • Integrate non technological dimensions in developments on thematic related to energy. • Motivate the students for their active participation in a course which concludes a sequence of lectures in thermodynamics and energy systems. - - - - *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	The exam consists in the evaluation of a report prepared by the student about one of the topics of the course.
Teaching methods	The methodology is based on the following activities: • Invitation of external speakers and specialists in their field to give a sound presentation of an energy related topic together with technical, scientific, social, environmental issues • Attendance to a workshop as far as possible • Technical visit of an industrial site or a research infrastructure • A report of the student, written in English, about one of the presented topics including a more personal research/ analysis
Content	The selected topics consist in actual questions. For example, let us mention: • Link between energy-economy • Philosophical roots of the energy/ecological crisis • Focus over the energy situation in Africa • AP1000 reactor and passive safety systems • Perception of energy needs • Nuclear fusion • Energy in buildings • Low carbon Belgium in 2050 • Nuclear wastes • Generation 4 nuclear reactors • Combined heat and power (CHP) and district heating • Visit of gas-steam combined power cycle • Practices over a real time combined power cycle simulator • Visit of nuclear installations (SCK'CEN, Belgoprocess) • Visit of the CHP of Louvain la Neuve Moreover, the students are invited to select one of the topics and to prepare a report, written in english, including a synthesis of the presentation plus a more personal analysis/research from the open literature in the field.

Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=9476
Bibliography	• Slides des conférenciers • Slides des conférenciers invités. **Obligatoire**
Faculty or entity in charge	MECA

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Electro-mechanical Engineering	ELME2M	3		
Master [120] in Mechanical Engineering	MECA2M	3		