UCLouvain

lelme2420

2023

Energetics.

5.00 credits	30.0 h + 15.0 h	Q2

Teacher(s)	Contino Francesco ;Jeanmart Hervé ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Main themes	• World energy outlook • Energy systems • Energy technologies • Environmental, economic, societal, ethical aspects of energy
Learning outcomes	**At the end of this learning unit, the student is able to :** **Contribution of the course to the program objectives (N°)** • AA1.1, AA1.3 • AA3.1, AA3.3 • AA5.2, AA5.3, AA.5.4, AA.5.5, AA5.6 • AA6.1, AA6.2, AA.6.3 1 **Specific learning outcomes of the course** • Memorize the main orders of magnitude and units in the field of energy • Identify and understand the main parameters required to characterize the performance, in terms of technical, environmental, economic, societal, and ethical aspects, of energy systems and technologies • Examine the literature on a topic related to energy • Question and weigh different opinions on energy topics • Defend in a written document and/or in a presentation your analysis (technical, environmental, economic, societal, and ethical) on an energy topic
Evaluation methods	Students are assessed on three aspects: - seminar preparation: depth of subject preparation, quality of questions and their justification, reflective process around questions, etc. This part is assessed by group during a seminar preparation interview with the teaching staff. - the quality of the summary and Q&A provided after the seminar. - two individual written assessments. The final mark is a weighted average of the marks obtained for the three elements: 25% for the preparation, 25% for the summary, and 25% for each of the written assessments. It is compulsory to be enrolled in a group and to take part in leading a seminar. **Please note**: given the way the course and its continuous assessment are organised, it is not possible to take the exam in the August/September session. The mark obtained (or absence) at the June session is final (RGEE Article 78).
Teaching methods	The course is organised in the form of seminars led by experts (from within or outside UCLouvain). Each seminar is supervised by a different group of students. The seminars are prepared by the students themselves (introduction of the speaker, moderation of the question-and-answer session, etc.) and led by the students themselves (preparation through in-depth study of the subject (additional reading), list of questions and reasons for their choice, etc.). Students should contact the speakers before their seminar. After the seminar, the moderating group must produce a summary to be shared with the other students and a series of questions/answers on the content of the presentation. The groups will be defined at the beginning of the semester.
Content	With the aim of opening up beyond the exclusively technical aspects, the teaching covers various energy-related themes in a very broad manner. Examples of themes are: • 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 • Visit of the CHP of Louvain la Neuve • Materials for the energy transition
Bibliography	• Selected papers and documents related to the topics of the seminars
Faculty or entity in charge	ELME

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Environmental Bioengineering	BIRE2M	5		
Master [120] in Mechanical Engineering	MECA2M	5		
Master [120] in Electro-mechanical Engineering	ELME2M	5		
Master [120] in Energy Engineering	NRGY2M	5		