



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	<ul style="list-style-type: none"> • World energy outlook • Energy systems • Energy technologies • Environmental, economic, societal, ethical aspects of energy
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>Contribution of the course to the program objectives (N°)</p> <ul style="list-style-type: none"> • 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 <p>Specific learning outcomes of the course</p> <p>1</p> <ul style="list-style-type: none"> • 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	<p>Students are assessed on two aspects:</p> <ul style="list-style-type: none"> - the preparation of a seminar: depth of preparation of the topic, quality of the questions and their justification, reflective process around the questions, etc. This part is assessed by group during a seminar preparation interview with the holders. - the quality of the seminar facilitation in the scientific sense of the term: identification of the most relevant questions from the audience, questioning of the speaker on the prepared questions, reactions to the content presented. Evaluation is again by group. <p>For both components, marks can be individualised according to the actual involvement of the different members of a group.</p> <p>The final mark is a weighted arithmetic average of the marks obtained for both parts.</p> <p>Attention:</p> <ul style="list-style-type: none"> - Attendance at the seminars is compulsory for all students. After three unjustified absences, the student will receive an absence mark for the course. Participation in other conflicting courses is not considered as a justified absence. - Due to the organisation of the course and its evaluation, it is not possible to present the course in the August/September session. The mark obtained (or absence) in the June session is final (RGEE Article 78).
Teaching methods	<p>The course is organised in the form of seminars led by experts (internal or external to UCLouvain).</p> <p>Each seminar is supervised by a different group of students. Seminars are prepared (preparation through an in-depth study of the subject, list of questions and the reasons for their choice, etc.) and led by the students themselves (introduction of the speaker, leading the question and answer session, etc.). For this purpose, students should contact the speakers before their seminar.</p> <p>The groups will be defined at the beginning of the semester.</p>
Content	<p>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:</p> <ul style="list-style-type: none"> • 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

	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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		