UCLouvain

lmapr2648

2019

Evaluation of sustainability in chemical and environmental engineering

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

5 credits	30.0 h + 15.0 h	Q2

Teacher(s)	Debecker Damien ;Françoisse Olivier ;Luis Alconero Patricia (coordinator) ;Noiset Olivier ;
Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	Sustainable development, environmental evaluation of processes, life cycle analysis, economic evaluation of processes, ethics and gender in engineering, intellectual property, legislation in the industry, technology for human development, creative thinking, group management
Aims	Given the AA repository of the program of "Master ingénieur civil en chimie et science des matériaux", this course contributes to the development, acquisition and evaluation of the following learning outcomes: 1 • 1.1, 1.2, 1.3 • 2.1, 2.2, 2.3, 2.5 • 3.1, 3.2, 3.3 • 4.1, 4.2, 4.3, 4.4, • 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 • 6.1, 6.2, 6.3, 6.4 - - - - *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	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** The students will be evaluated by means of : • a written exam with short questions on the aspects seen during the course, which will be a 40% of the final mark; • a work in groups to be developed during the semester, which will consist of the quantitative evaluation of a product/process from the point of view of sustainability aspects shown in the seminars: environmental analysis, economic study, social aspects, etc. This work will be presented the last day of the course and it will conform the 60% of the final mark (report + oral presentation).
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** The course will be composed of 10 seminars given by experts in the matter and a project that will focused on the application of aspects taught in the course, such as life cycle assessment, economic evaluation, gender and ethical issues, and intellectual property, on the manufacture of a product.
Content	**Seminars:** The following topics will be addressed in the seminars: 1. Introduction to sustainable development 2. Environmental evaluation of a product/process using life cycle analysis 3. Safety in the industry 4. Economic evaluation of processes – case of chemical processes 5. Ethics and gender in engineering 6. Intellectual property and implication in industry 7. General and specific legislation in the industry (focus on REACH) 8. Technology for human development/ engineering in developing and developed countries 9. Creative thinking: how to develop one's own ideas 10. Group management in industry **Project:**

	Groups of 4-6 students will evaluate quantitatively the environmental impact of a product/process via a life cycle assessment, perform an economic evaluation and discuss several aspects related to the topics given in the seminars (e.g., ethics, gender issues, intellectual property). The adequate software will be used, if required (e.g., SimaPro for the life cycle assessment). The students will be asked to verify/compare their final results with real examples provided by experts or on-line sources.
Inline resources	Site Moodle du cours *:* https://moodleucl.uclouvain.be/course/view.php?id=9064
Bibliography	Des notes de cours, diapositives
Other infos	All the course material will be available in the Moodle platform. It is highly recommended to have attended the LMAPR2647 (Sustainable treatment of industrial and domestic waste) course.
Faculty or entity in charge	FYKI

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Interdisciplinary Advanced Master in Science and Management of the Environment and Sustainable Development	ENVI2MC	5		
Master [120] in Chemistry and Bioindustries	BIRC2M	5		
Master [120] in Environmental Science and Management	ENVI2M	5		
Master [120] in Environmental Bioengineering	BIRE2M	5	LBIRC2109 AND LBRTE2101 AND LBRTE2201	
Master [120] in Chemical and Materials Engineering	KIMA2M	5		