UCL Université catholique de Louvain

LMAPR2648

2015-2016

Sustainable treatment of industrial and domestic waste: Case studies

5.0 credits	30.0 h + 15.0 h	2q

Teacher(s) :	Françoisse Olivier ; Noiset Olivier ; Luis Alconero Patricia ; Debecker Damien ; Stenuit Benoît ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	Site iCampus du cours (> http://icampus.uclouvain.be/claroline/course/index.php?cid=LMAPR2648)
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 :	-- Regulation in the industry -- Last generation technology for the treatment of gaseous, liquid and solid streams -- Life Cycle Assessment (LCA)
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: -- AA1.1, -- AA2.1, AA2.2, AA2.3, AA2.4, AA2.8, -- AA3.1, AA3.2, -- AA4.1, AA4.2, AA4.3, AA4.4, AA4.5 -- AA5.1 More concretely, at the end of the course, the student will be able to : -- To have acquired a global and in depth vision of practice in treatment and valorization of gas, liquid and solid residual streams. -- To know the last generation technologies under research to improve or substitute conventional technology. -- To have acquired, by a visit to an industrial plant, a practical view of present methods in use and possibilities of waste valorization (material or energy). -- To be able to write a Life Cycle Assessment (LCA) report based on commercially available software's. -- To be able to evaluate critically an industrial process and propose the best available technologies. *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 students will be evaluated by means of : -- a written exam with short questions on the aspects seen during the course, which will be a 35% of the final mark; -- a work in groups to be developed during the semester, which will consist of the selection, evaluation and optimization of a domestic/ industrial process from the sustainability point of view. This work will be presented the last day of the course and it will conform the 55% of the final mark; -- report of the visit : 10% of the final mark.

Teaching methods :	-- seminars on advanced treatment technology given by experts in the matter; -- practical session using specific software to perform the Life Cycle Assessment (LCA) of a process; -- visit to a treatment plant; -- follow-up of the project via the forum (available in iCampus) and organized meetings with the professors.
Content :	This course is complementary to the course LMAPR 2647, focusing on more specific aspects of practical ways to evaluate the sustainability of a process as well as including last generation technologies that are under research to improve or substitute the conventional methods. To achieve this, practical exercises on LCA using specific software, workshops, seminars given by experts and a visit to a plant of valorization of waste are programmed activities within the course. The visit of an industrial plant (e.g. incinerator) will be prepared by establishing a list of questions to be asked in different fields (gas, liquids, solids). After the visit, a debriefing will be followed by a written report. This course should also address the following topics: regulations in the industry; aspects of industrial ecology (in connection with the course LFSA2245 « Environnement et entreprise »); Best Available Technologies; membrane-based technology; catalytic abatement; Life Cycle Assessment (practical sessions); advance oxidation methods; photocatalytic degradation of liquid pollutants.
Bibliography :	Notes of the course, slides
Other infos :	All the course material will be available in the iCampus 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 / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Chemical and Materials Engineering	KIMA2M	5	-	
Master [120] in Environmental Bioengineering	BIRE2M	5	LBIRC2109 **and** LBRTE2101 **and** LBRTE2201	
Master [120] in Chemistry and Bioindustries	BIRC2M	5	-	
Master [120] in Environmental Science and Management	ENVI2M	5	-	