UCLouvain

lenvi2012

2017

Environment Pollution

7 credits	45.0 h + 30.0 h	Q2

Teacher(s)	Ayadim Mohamed ;Gerin Patrick coordinator ;Kruyts Nathalie ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	The course aims at providing the students with a broad, multidisciplinary scientific background to approach environmental pollution and management problems (causes, consequences, remedies, influences of management practices). The objective of the course is to introduce students to a scientifically rigorous and critical approach of environmental problems and remediation solutions.
Aims	At the end of this course, the student has acquired general knowledge in the field of environmental pollution. More specifically, facing a case study, (s)he is able to: - Properly use the parameters (variables) and the units that characterize the environmental pollution; - Describe, explain and predict the behaviour of the various forms of pollution in environmental systems or technological remediation processes, with the proper identification of the processes involved, based on their knowledge of the concerned physical, chemical or biological principles; 1 - Select or rank remediation technologies according to their relevance to the nature of the pollution. After the seminar, the student is able to: - Check the validity and relevance of claims in the environmental field, after seeking relevant scientific and technical arguments; - Exploit and organize the pros and cons arguments, to take and defend his own position with respect to these claims; - Communicate synthetically his position, both orally and in writing. - - - - *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	Written examination according to the learnin outcomes. Oral presentation and written report on the personal essay (as student teams).
Teaching methods	Lectures, seminars by the students. Personal work of analysis of general, scientific or technical documents, oral presentation and defence, and report writing on the personal work (as team).
Content	Lectures 1. Water pollution: sources, mechanisms and symptoms of pollution in running water and lakes. Influence of pollution on living beings: oxygenation and deoxygenation, eutrophication. Measurement of water quality. Wastewater treatment. Prevention of water pollution. 2. Air Pollution: Chemical reactions and greenhouse effect: a) Combustion and pollution (flame, fossil fuels, nitrogen oxide formation .. b) car (used engines, hydrogen fuel cell, ..); c) Transfer and evolution of pollutants; d) Effects of pollutants on living beings, materials, climatic & economic consequences; e) emission control means. 3. Acoustic pollution: a) Introduction and definitions, physical and psychophysiological characteristics of sound; b) auditory and non-auditory effects of noise on living beings; c) noise reduction means. 4. Radioactive pollution: a) Introduction and definitions; b) Transfer of pollutants into the environment. 5. Soil Pollution: a) Mineral Pollution (heavy metals): origin and consequences of pollutions, effects on fauna and flora; b) Organic pollution; Pesticide pollution: prevention, fixing mechanisms, detoxification; c) Pollution from livestock waste and other organic materials: influence on plants, determination of allowable doses, reduction of the load (biogas). 6. Solid wastes: characterization and collection of solid wastes. Selective collection. Treatment methods applied to urban waste: controlled landfill, composting, sorting, recycling. Issue of recycling. 7. Electromagnetic Pollution: basics, impact of electromagnetic waves and light. Seminars presented by professional actors are associated with the program whenever possible. Student seminar: In groups, students investigate and develop the critical analysis of claims disseminated to the general public on a practical problem in pollution and environmental management. They present their arguments in synthetic oral and written summary ofcommunication. Laboratory and practice:

	The laboratory activity is an introduction to the practical aspects of the characterization of pollution, based on field collection of water samples, laboratory analysis and interpretation of results. Visits of sewage or waste treatment plants or polluted sites are organized when possible.
Bibliography	Supports de cours et documents de référence disponibles sur Moodle. Livre utile mais non obligatoire: Claus Bliefert , Robert Perraud. 2008. Chimie de l'environnement: Air, eau, sols, déchets. De Boeck. ISBN: 2-8041-5945-0. pp. 478. Ce livre est plus large que la matière vue au cours et la présente de manière différente, mais est un bon document de base, généraliste, pour un futur professionnel de l'environnement. Habituellement disponible à la DUC.
Other infos	.Teaching team of Professors with different backgrounds. Invited speakers when possible.
Faculty or entity in charge	ENVI

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Environmental Science and Management	ENVI2M	7		
Master [60] in Environmental Science and Management	ENVI2M1	7		