UCL Université catholique de Louvain

LENVI2012

2010-2011

Environment Pollution

6.0 credits	37.5 h + 37.5 h	2q

Teacher(s) :	Kruyts Nathalie (compensates Delvaux Bruno) ; Ayadim Mohamed ; Gerin Patrick (coordinator) ; Delvaux Bruno ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	The course aims to give students a scientific and relatively large multidisciplinary view of pollution problems and environmental management issues (causes, consequences, remedies, influences of the management). The aim of this course is to introduce students to a scientifically rigorous and critical approach.
Aims :	Knowledge: - Introduction to the environmental pollution sources, characterization techniques, preventive and curative approaches. - Knowledge of theoretical background of the main issues of pollution and of the main remediation technologies. Know-how and skills: - Ability to find, understand, analyze, synthesize and assess quantitatively and critically environmental data (scientific, technical, economic, social,...) related to pollution problems. - Ability to present orally and in written a short synthetic and structured report on a critical environmental issue. *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".*
Content :	The course is based on several lectures modules dealing with the following areas: water, air, soil, solid wastes, radioactive pollution. Seminars presented by professional actors are associated with the program whenever possible. The course also includes seminars prepared and presented by the students themselves. The seminars focus on pollution and environmental management topics. The course also includes an introduction to practical aspects of the characterization of pollution, based on field collection and laboratory analysis of water samples. Visits to water or waste treatment facilities are organised whenever possible, in order to introduce students to industrial problems. The evaluation is based on an exam and on a personal critical synthesis of a pollution problem (causes and solutions), presented orally and in the form of a written report Content: 1. Water pollution sources, mechanisms and symptoms of running water pollution and lakes. Influence of pollution on living beings: oxygenation and deoxygenation, eutrophication. Measuring water quality. Treatment and wastewater treatment. Prevention of water pollution. 2. Air Pollution - Chemical reactions and the greenhouse gas effect: a) Combustion and pollution (flame, fossil fuels, formation of nitrogen oxide, .. b) Car (used engines, hydrogen fuel cell, ..); c) Transfer and evolution of pollutants; d) Effects of pollutants on living beings and materials, climatic and economic consequences; e) Means to control emissions. 3. Noise pollution: a) Introduction and definitions, physical and psychophysiological characteristics of sound b) Auditive and non auditive effects of noise on living beings; c) Means to reduce noise. 4. Radioactive pollution: a) Introduction and definitions; b) Transfer of pollutants in the environment. 5. Soil Pollution: - Mineral Pollution (heavy metals): origin and consequences of pollutions, effects on fauna and flora. - Organic pollution. Pesticide pollution: prevention, fixing mechanisms, detoxification. Pollution from livestock wastes and other organic materials: influence on plants, determination of allowable doses, reducing the load (methane). 6. Solid waste: characterization and collection of solid wastes. Sorted collection. Treatment methods: landfill, composting, sorting, recycling, applied to urban waste. 7. Electro-magnetic pollution: background, impact of electromagnetic waves and light.
Other infos :	Prerequisite: basic knowledge (bachelor level) in chemistry, biology and physics. Evaluation method: Examination on the course content and personal work: critical synthesis on a problem of pollution (causes and solutions) presented orally and in the form of a written report. Teaching: team of teachers and occasional guest speakers. Miscellaneous: The student who chooses this course as an option may decide to not follow the exercises or the seminars.
Cycle and year of study :	> Master of arts in Business engineering > Master [60] in Environmental Science and Management > Master [120] in Environmental Science and Management > Master [120] in Civil Engineering

Faculty or entity in charge:	ENVI