UCLouvain

lbir1230

2019

Introduction to biosphere 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	60.0 h	Q2

Teacher(s)	Baret Philippe (coordinator) ;Defourny Pierre ;Delmelle Pierre ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	The course proceeds from actual stakes related to the biological, agronomical and environmental engineering and will approach the following themes: - the bio-geochemical cycles of the biosphere (water, carbon, nitrogen); enrgetic flows. - notions of bio-climatology, classification of climats, climatic indicators. - basic notions of ecosystems (biotopes and biocenoses, trophic chains); food chains; production and productivity. - sustainable development; notions of equilibrium and imbalance; notions of vulnerability; biodiversity and the conservation problematic; pollution and tracability problems. - role of the soil as a reactor in the functioning of ecosystems: water and mineral elements storage, alteration and acidification; notions of resilience, mobility of biogenous elements and bio-pedological cycles; storage and mobility of contaminants. - impact of the human being on the functioning of the ecosystems and on the soil.
Aims	1 This course aims the initiation of the students to the important stakes related to the biological, agronomical and environmental engineering; to discern the role of the futur bio-engineer and to acquire the basic concepts essential to the analysis and management of ecosystems. It should bring the students to: - understant the technical and scientific acts of a bio-engineer in a framework of wich's dimentions go beyond those of the engineer sensu stricto. - acquire the basic concepts of the analysis of the air-water-soil interactions and of the global functioning of ecosystems. - understand the bio-geochemical cycles (water, carbon, nitrogen) and the global funtioning of their compartments, especially the soil. - - - - *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 basic principles will be taught by means of concrete examples related to the biosphere engineering. For example: starting from the human nutrition seen globally, different concepts will be taught: trophic and food chains, energetic flows, productivity, bio-geochemical cycles (xater, carbon, nitrogen), functions of the soil compartment such as storage, mineral supply... The learning process wiil be based on a problem-approach, where the basic concepts are acquired through an analysis of the stakes and a perspective view of the concepts.
Bibliography	Le cours ne fait appel à aucun support particulier qui serait payant et jugé obligatoire. Les ouvrages payants qui seraient éventuellement recommandés le sont à titre facultatif.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Bioengineering	BIR1BA	5		
Additionnal module in Geography	LGEOG100P	5		
Minor in Scientific Culture	LCUSC100I	5		