UCL Université catholique de Louvain

LBIRA2109

2013-2014

Agrarian systems and farm

5.0 credits	45.0 h + 7.5 h	1q

Teacher(s) :	Ben Youssef Sadok Mohamed Walid ; Bertin Pierre (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	iCampus
Prerequisites :	Biology, ecology, soil science , climatology of the first three years of the program Bioengineering or equivalent.
Main themes :	Part A The impact of agro-ecosystem on the environment, the impact of climate change on agro-ecosystem . The sustainability of agro-ecosystems : its definition , its objectives, assessment and the means of its implementation on environmental and socio-economic plans. Part B evolutionary dynamics of agricultural systems . Origin of agriculture and cultivated or farmed species . Conditions for the functioning of agricultural systems : tools , labor , replacement fertility , plant-animal interactions. Methodology for studying the dynamics of farming systems, their balance or malfunction : economic, social and political causes of the ecological genesis , evolution and collapse systems in history. New balances.
Aims :	a. Contribution of instruction with regards to the referential of leaning outcomes Knowing and understanding a thorough knowledge basis in the field of agricultural systems (M1.1 , M1.2 , M2.4 , M2.5) Activate and mobilize knowledge in engineering using a quantitative approach a complex problem in agronomy at the system level (M1.1 , M1.2 , M2.4 , M2.5) Propose a rigorous and innovative approach to solve a research problem in the field of agricultural systems (M1.3 , M3.3 , M3.7 , M3.8) Develop and implement a comprehensive and innovative approach in engineering (M4.1 to M4.7) Communicate (M6.1 , M6.3 , M6.7) Act responsibly (M7.1 , M7.3) b . Specific formulation for this activity AA program (maximum 10) At the end of this activity, the student will be able to : " Action verb " + " content " + " performance level" + " terms , conditions , circumstances "' 1: M1 know and understand the functioning of agricultural systems and their environmental impact 2: M2 mobilize knowledge and critically deal with a complex problem at the agro-ecosystem scale, integrating the disciplines of agronomy, ecology , geography, cimatology , technology , economy , sociology , agricultural policy 3: M3 be able to formulate a research question related to the functioning of the agricultural system, and develop and implement a methodology to approach it 4: M4 distinguish strategic key elements underlying the complex functioning of an agricultural system 5: M4 analyze this issue in a systemic and multidisciplinary way on order to offer a diagnosis 6: M4 be able to conceptualize the issues raised 7: M6 understand and use scientific articles related to the instruction 8: M6 formulate synthetically a complex problem 9: M7 demonstrate intellectual independence, and develop a critical take on the impacts of agricultural practices 10: M7 integrate humanistic values '', cultural openness and solidarity in the analysis of agrosystems *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 exam dealing with interdisciplinary issues, where the student will have to demonstrate analytical and critical thinking based on acquired knowledge during the instruction
Teaching methods :	Lectures based on practical examples, case studies, guided questions Field trips (visiting agricultural companies, farmers and agronomic trials) Modeling exercises. Depending on the season, taking measurements on farm. Scientific publications from generic or specialized international journals, UN/NGO/offical reports, book chapters, documentaries and video presentations of renown scientists
Content :	Part A Principles of agrosystems functioning and comparison of agro-ecological and natural ecological systems. The evolution and amplification of the impacts of agricultural activities since the advent of humanity. Industrialization and anthropogenic Climate Change : Contribution of agriculture and reciprocal effects. Definition of the holistic and complex sustainability of agrosystems. The interconnection of environmental, economic, social and ethical dimensions. Improving sustainability : assessment tools'Tools for tactical and strategic operations and social, economic, cultural and ethical tools.

	Part B Domestication of plants and animals. Transition from predation to agriculture. Nomadic agriculture and settlement agriculture. Hydraulic systems. Mountain agriculture. Fallow systems. No-fallow systems. Mechanization, genetic improvement. Transport and globalization.
Bibliography :	Instruction material Syllabus and powerpoint slides available on icampus Seminars and conferences Additional literature Mazoyer et Roudard, 2002. Histoire des agricultures du monde FAO, 2001. Systèmes d'exploitation agricole et pauvreté
Other infos :	In cases where the students do not master the French language, the instruction for these students will be replaced by a literature review on a topic related to the issues developed above, to be defined with the instructor.
Cycle and year of study :	> Master [120] in Agricultural Bioengineering
Faculty or entity in charge:	AGRO