UCL Université catholique de Louvain

LBIRA2102

2015-2016

Applied biotechnology

4.0 credits	30.0 h + 7.5 h	1q

Teacher(s) :	Mahillon Jacques (coordinator) ; Donnay Isabelle ; Draye Xavier ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	iCampus: PowerPoint files
Prerequisites :	Basic knowledge in Genetics (LBIR1322), Biochemistry (LBIR1321), Microbiology (LBIR1323), Animal Physiology (BIR1324) and Plant Physiology (BIO1341)
Main themes :	General principles related to cell culture, cell modification and organism regeneration in animals, plants and microorganisms.
Aims :	a. Contribution of the activity to the LO (LO from the program) M1.1, M2.1, M3.1, M5.6, M6.1, M7.1 b. LO from the program specific to this activity At the term of the activity, the student will be able to: - understand the main biotechnologies related to animals, plants and microorganisms that are used in the context of production and/or improvement, - classify the main applied biotechnologies related to animals, plants and microorganisms, - describe clearly and simply the major steps of a given biotechnology, - understand the dynamics of biotechnological evolution beyond the conventional boundaries of life domains, - objectively address questions downstream those technologies (economy, nutrition, health, society) by using the fundamentals and the context of biotechnological innovation. *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
Teaching methods :	Lectures Seminars ' analysis and presentation of scientific papers Lab visits
Content :	- Basic knowledge of cell culture, manipulation and conservation. 1. Microorganisms (microbial kinetics, strains preservation) 2. Animals (stem cells, in vitro production of embryos and related techniques, cryobanking) 3. Plants (totipotency, in vitro culture, protoplasts culture, doubled haploids, cell growth regulation and development) - Principles of cell modification (transformation, transgenesis, mutagenesis, heterologous/homologous recombination, vectors) - DNA technologies, isolation and cloning, gene construction, genomics - Organisms regeneration from modified cells (animal and plant cloning, selection, markers, protoplast fusion, in vitro culture) Those topics are separately addressed for plants, animals and microorganisms. The comparison between the three domains is addressed by means of seminars presented by the students.
Bibliography :	Files on iCampus
Faculty or entity in charge:	AGRO

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	4	-	
Master [60] in Biology	BIOL2M1	4	-	
Master [120] in Agricultural Bioengineering	BIRA2M	4	-	