WFARM1221T

2015-2016

Biochimie et biologie moléculaire (partim)

5.0 credits	45.0 h + 5.0 h	1q

Teacher(s) :	
Language :	Français
Place of the course	Bruxelles Woluwe
Prerequisites :	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes :	Sub-sections : - A. General aspects : physico-chemical aspects of biochemical processes (including enzyme kinetics and classification, bioenergetics); - B. Molecular Biology (in Eukarya) : from genes to active proteins (structure and regulation); interest of molecular biology in diagnosis and drug development. - C. Metabolism : description, regulation, and tissue specificity of key anabolic and catabolic pathways. - D. Integrated view of metabolic pathways in the whole organism; modulation in several (patho)physiological situations.
Aims :	1. To acquire fundamental knowledge in biochemistry (including molecular structures, bioenergetics, enzyme kinetics, molecular biology) and metabolism. 2. To include this knowledge in specific fields of pharmaceutical sciences (medicinal biochemistry, drug metabolism, pharmacology, toxicology, nutrition). 3. To acquire an integrative approach of metabolic regulation (relations between metabolic pathways, adaptation to specific physiological situations) 4. To evaluate the relevance of new techniques (molecular biology) in the discovery of drugs and new targets. *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 :	A. Principles of chemistry applicable to biological processes. Concepts of molecular interactions, enzyme kinetics, and bioenergetics in the context of drug discovery (drug metabolism, signal transduction, synthetic peptides, development of enzyme inhibitors). B. Structure and functions of genes and nucleic acids; principles/regulation of gene expression and protein synthesis; gene and protein analysis; application of molecular biology-derived techniques in medicine and drug development C Description and regulation of carbohydrates, lipids, amino-acids , and nucleotides metabolism at the molecular, cellular and tissue level ; control of energy homeostasis; hormonal regulation and cell signaling; metabolic fluxes. D. Metabolic adaptation to physiological situations (such as nutritional status, stress); illustration of inter-organs cooperation (liver, adipose tissue, muscle, brain). Practical laboratory exercises (enzymes kinetics, molecular biology) and seminars (use of reference book and website; oral presentation of case-study)
Other infos :	Other elements Cellular biology ; organic and general chemistry. Evaluation Evaluation of experimental knowledge during the period of practical exercise. Written exam with questions integrating all aspects (A to D) . Support Notes including key figures, power point presentations, and summary of each chapter. Ouvrages de référence ; sites internet et adresses d'organismes intéressants : Biochemical Pathways Eds Gerhard Michal. Wiley press
Faculty or entity in charge:	FASB

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

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in Dentistry	DENT1BA	5	WMDS1101 **and** WMDS1102 **and** WMDS1105	