UCL Université catholique de Louvain

LGBIO1113

2015-2016

Anatomie et physiologie des systèmes

5.0 credits	30.0 h + 15.0 h	1q

Teacher(s) :	Behets Wydemans Catherine ; Cornu Olivier ; Ronsse Renaud ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Moodle > http://moodleucl.uclouvain.be/course/view.php?id=7882
Prerequisites :	LFSAB1101 - Mathématiques 1 LFSAB1102 - Mathématiques 2 LFSAB1201 - Physique 1 LFSAB1202 - Physique 2 LFSAB1301 - Chimie et Chimie Physique 1 LFSAB1401 - Informatique 1 LGBIO1111 - Biologie et physiologie cellulaire
Main themes :	This course aims at providing bachelor students in engineering with a general introduction to the human body systems anatomy and physiology. This course will further emphasize that living systems belong to the investigation fields of engineering, through specific examples. A specific focus will be put on the process leading to the good understanding of the studied system, in order to model, analyze, and/or take measurements on it.
Aims :	With respect to the AA referring system defined for the Master in Biomedical Engineering, the course contributes to the development, mastery and assessment of the following skills: AA1.1, AA1.2 AA3.1, AA3.2 AA4.1, AA4.2, AA4.3, AA4.4, AA4.5 AA5.1 More precisely, at the end of this course, students will be able to: a. Disciplinary Learning Outcomes -- Master the basic morphological data in order to get a 3D mental representation of the different systems and organs of the human body; -- Describe the tissue structure and understand the working principles of a subset of the main healthy systems, except the central nervous system (for instance: cardio-circulatory, respiratory, digestive, urinary, reproductive and locomotive systems); -- Reproduce the approach followed on this subset on the other organic and articular systems. -- Be acquainted with the main physiological mechanisms so as the mechanical properties of different tissues: bones, muscles, vascular tissues, ligaments, and tendons. -- Understand the functioning of (a subset of) the locomotive system, and derive the functional properties of the musculo-skeletal system from the fundamental laws of movement b. Transversal Learning Outcomes -- Achieve, through self-learning, an anatomical and physiological characterization of an organ or joint (or part of it) that was not covered in the course, used bibliographic references (books, websites, etc.). -- Write down a report about this characterization, using appropriate vocabulary from the field, in French. -- Carry on an oral presentation of this work in front of the teaching staff *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 :	Students will be evaluated through two complementary measures: a group project (40% of the final mark) and a session exam (60%). The group project (typically, by groups of 3 students) consists in the anatomical and physiological characterization of the musculo-skeletal structure of a human joint (with the osteoarticular and myological aspects). More particularly, each group will have to answer a specific question about this joint (What is the role of a specific ligament? What are the forces acting in a specific posture? Etc.). The exam counts two parts, of equal weight: one 'closed book' part aiming at evaluating the mastering of the lectures material, and one 'open book' part (including the access to some reference websites) aiming at evaluating the capacity to reproduce the process of anatomical and physiological characterization covered during the lectures. This will be done on a new organ or joint.
Teaching methods :	The course has a series of lectures, providing the anatomical and physiological description of the main human organs (locomotive, cardio-circulatory, respiratory, digestive, urinary, reproductive systems). Practical work will mainly consist in the achievement of a group project targeting the anatomical and physiological characterization of a joint. During the 4th week (S4), statements are released; during S6, the groups have to deliver their working plan; during S8, the groups have to deliver their written report; between S10 and S12, the groups present their work to the staff. A visit of the dissection room at the medical school in Woluwe and a preparatory session will also be organized.
Content :	The various organic and articular systems covered during the lectures are the following: -- General introduction, and elements of histology (e.g. : skin) - 1 lecture -- General osteology - 2 lectures -- Myology - 1 lecture -- Peripherical nervous system - 1 lecture -- Modeling of the musculo-skeletal system - 1 lecture -- Cardiovascular system - 2 lectures -- Respiratory system - 1 lecture -- Digestive system and endocrine - 3 lectures -- Urinary and genital systems - 1 lecture
Bibliography :	Book of general anatomy (in pdf). Online atlas.
Faculty or entity in charge:	GBIO

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Minor in Engineering Sciences : biomedical	LGBIO100I	5	-	
Master [120] in Physics	PHYS2M	3	-	