UCLouvain

lgbio1113

2020

Due to the COVID-19 crisis, the information below is subject to change, in particular that concerning the teaching mode (presential, distance or in a comodal or hybrid format).

5 credits	30.0 h + 15.0 h	Q1

Teacher(s)	Behets Wydemans Catherine ;Cornu Olivier ;Kerckhofs Greet ;
Language :	French
Place of the course	Louvain-la-Neuve
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. <u>Disciplinary Learning Outcomes</u> 1 • 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. <u>Transversal Learning Outcomes</u> • 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	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Students will be evaluated through two complementary measures: a group project (40% of the final mark) and an exam (60%). The group project (typically, by groups of 3 students) consists in the anatomical and physiological characterization of a biological system, and the contribution of the engineer in the treatment of this system. The exam counts two parts, of equal weight: one 'closed book' part aiming at evaluating the mastering of the lecture 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.
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** 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 biological system in a given pathological context, and the contribution of the engineer in the treatment of this system. 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 histology • Skin • General osteology • Myology • Modeling • Cardiovascular system • Respiratory system • Digestive system and endocrine • Urinary and genital systems
Inline resources	Moodle http://moodleucl.uclouvain.be/course/view.php?id=7882
Bibliography	Syllabus d'anatomie générale (version pdf). Atlas en ligne (online).
Faculty or entity in charge	GBIO

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Teaching methods	Online teaching
Evaluation methods	Students will be evaluated through two complementary measures: a group project (40% of the final mark) and an exam (60%). The group project (typically, by groups of 3 students) consists in the anatomical and physiological characterization of a biological system, and the contribution of the engineer in the treatment of this system, and will be evaluated online during the year. The exam will be an online open book exam, and aims at evaluating the capacity to reproduce the process of anatomical and physiological characterization covered during the lectures.

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Minor in Biomedical Engineering	LMINOGBIO	5		
Specialization track in Biomedical Engineering	FILGBIO	5		
Master [120] in Chemistry and Bioindustries	BIRC2M	5		
Master [120] in Physics	PHYS2M	3		
Minor in Engineering Sciences : biomedical (only available for reenrolment)	MINGBIO	5		