UCLouvain

lgbio1112

2018

Introduction to biomedical engineering

5 credits	45.0 h	Q2

Teacher(s)	Lefèvre Philippe ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	Biomedical engineering is a pluridisciplinary field that finds its place at the interface between biomedical sciences and engineering sciences leading on to a multitude of applications. Thus, biomedical engineering is not only an important discipline subject to specific teachings in a constantly increasing number of universities, but also a domain quite difficult to apprehend at first glance. Therefore the main objective of this course is to present to the students whose interests lay in biomedical engineering an introduction to the discipline. Concretely, this course covers an introduction to the main domains of biomedical engineering: (bio)-instrumentation, medical imaging, medical computer sciences, biological models, artificial organs, (bio)-materials, rehabilitation engineering, radiophysics, and clinical engineering.
Aims	Regarding the learning outcomes of the program of "Master in Biomedical Engineering", this course contributes to the development and the acquisition of the following learning outcomes: AA1.1, AA1.2, AA1.3 AA6.2 1 **More precisely, at the end of this course, students will be able to:** • understand, through a series of examples, the notions of (bio)instrumentation, (bio)material, artificial organs, medical imaging, clinical engineering, modelling of biological systems, etc. ' • later on, apply these concepts in order to solve elementary problems in the field of biomedical engineering - - - - *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 individually evaluated (written and/or oral examination) on the learning outcomes detailed above.
Teaching methods	The course is made of lectures given by the teachers.
Content	The different fields of application of engineering to biomedical sciences will be presented in the course, with many examples of practical implementations. Among them: • Biomedical engineering : a historical perspective • Ethics in the field of biomedical engineering • Biomechanics (mechanical properties of biomaterials and applications) • Rehabilitation • Biomaterials • Tissue engineering • Bioinstrumentation • Biosensors • Biomedical signals processing • Mathematical modeling of physiological systems • Bioinformatics and genomics • Medical imaging
Inline resources	Moodle https://moodleucl.uclouvain.be/course/search.php?search=LGBIO1112
Bibliography	Les documents du cours sont disponibles sur Moodle. "Introduction to Biomedical Engineering", Elsevier, disponible à la BST
Faculty or entity in charge	GBIO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Physics	PHYS2M	5		
Bachelor in Engineering	FSA1BA	5		
Minor in Engineering Sciences : biomedical	LGBIO100I	5		