UCLouvain

lbir1110
2017

General Mathematics 1

8 credits	60.0 h + 37.5 h	Q1

Teacher(s)	Hanert Emmanuel coordinator ;Vitale Enrico ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	The course covers the following topics and illustrates them by many examples and applications related to the bio-engineer training: I. Sequences and series. II. ' Analysis of functions of a single variable: a) Continuity and limits, b) Derivatives, c) Integrals and d) simple differential equations.
Aims	1 BY the end of this module, students will be able to: · Handle functions of a single real variable. · Write rigorous mathematical reasoning. · Critically read mathematical statements and analyse them rigorously. · Solve exercises and understand the results requiring the use of definitions, theorems and formal proposals. · Transpose abstract mathematical concepts to practical problems related to the field of bioengineering. · Model simple biological systems using differential equations of the first order and resolve. Regarding the learning outcomes of the program of Bachelor in bioengineering, this course contributes to the development and the acquisition of the following learning outcomes: : 1.1, 1.5, 1.6, 2.3 - - - - *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".*
Teaching methods	All the course material is presented during lectures that consist of two sessions of two hours each week. Practical sessions complete the course and allow you to familiarize yourself with the objects, tools, techniques and methods of computation seen in lecture. There will be one or two practical's a week. You are advised to consult your schedule each week so you do not miss any session. During the semester, homework will be offered to allow you to continue the work done during lectures and practicals. These homework's will be evaluated and will be yield a bonus that will be added to the final mark. tutorials will also be proposed each week to give you an opportunity to ask questions to the teachers and assistants responsible for this module Home working is essential to consolidate your learning, including making links between different concepts and techniques, solving exercises and writing rigorous reasonings. The reference book used for this course contains many solved exercises that will allow you to practice at home.
Content	The goal of this course is to introduce the basic tools of analysis, in order to apply them in the field of bioengineering. This will allow you to understand the basic concepts required to develop models, but also to acquire some calculation skills. The practicals will give you the opportunity to do different sort of exercises (calculations, reasoning, applications). Particular attention will be given to illustrations and applications with direct reference to bioengineering. The exercises also help the contextualization of the most theoretical concepts based on concrete problems that bioengineers will face throughout their training and professional life.
Bibliography	Ouvrages de référence et outils de travail : Ce cours se base uniquement le premier volume du livre de référence « Analyse, concepts et contextes ' Fonctions d'une variable » de James Steward, 3$^{\text{ème}}$ édition, de boeck. Ce livre est disponible à la DUC. Des documents complémentaires seront également mis à disposition sur le site Moodle du cours.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Bioengineering	BIR1BA	8		🔍
Master [120] in data Science: Statistic	DATS2M	8		🔍