UCL Université catholique de Louvain

LSINF1112

2016-2017

Complément d'analyse et algèbre

5.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	Peters Thomas ; Remacle Jean-François ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	The course focuses on -- understanding of mathematical tools and techniques based on a rigorous learning of concepts favored by highlighting their practical application, -- careful handling of these tools and techniques in the context of practical applications, For most concepts, applications are selected from the other courses of the computer science program (eg economy). Functions of two variables -- representations in R3, -- link with systems having two inputs and one output -- limit, continuity, -- partial derivatives (including graphical interpretations) -- extremum (global and local) -- double integrals Multivariate function -- Analysis and optimization of functions with several variables, -- partial derivatives of higher order, -- Hessian matrix, -- free optimization and constrained optimization (equalities and inequalities) -- calculation of multiple integrals matrix calculation -- transposition, -- operations on matrices, -- rank and resolution of a linear system, -- inversion, -- determinant Linear algebra -- vector spaces (vector, independence, basis, dimension) -- linear applications (applications to plan transformation, kernel and image), -- eigenvectors and eigenvalues "(including applications)
Aims :	Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: -- S1.G1 -- S2.2 Students completing successfully this course will be able to

	-- Model real problems using functions of several variables and arrays; -- Solve practical problems using the computation techniques of partial derivatives and multiple integrals (especially optimization problems); -- Solve real problems using matrix computation techniques (in particular the resolution of linear systems); -- Reason using correctly the mathematical notation and methods keeping in mind but exceeding a more intuitive understanding of the concepts. *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".*
Faculty or entity in charge:	INFO

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in Computer Science	SINF1BA	5	-	🔍