





4.00 credits

30.0 h + 30.0 h

Q2

Teacher(s)	Ponce Augusto ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	<ul style="list-style-type: none"> • Elements of matrix calculus (what is needed for the extrema of a function of several variables: determinant and eigenvalues). • Functions of two (or more) real variables (visualization, sections and contour lines, continuity and limits, partial and directional derivatives, gradient, tangent plane and differentiability, free extrema, multiple integrals). • Introduction to vector analysis (parametric curves and surfaces, line and surface integrals, divergence and rotational, Stokes type theorems).
Learning outcomes	
Evaluation methods	<p>The acquisition of skills will be assessed in a final exam. The questions will ask students to select and apply methods from the course to solve exercises.</p> <p>The evaluation will focus on :</p> <ul style="list-style-type: none"> • knowledge and understanding of the various mathematical objects and methods in the course, • the accuracy of the calculations, • the quality of the writing of the answers.
Teaching methods	<p>The learning activities consist of lectures and practical sessions.</p> <p>The lectures aim at introducing the fundamental concepts and motivating them with examples.</p> <p>The supervised exercises will allow students to become familiar with the techniques and methods of differential and integral calculus in several variables, through the solution of problems and exercises.</p>
Content	<p>The course will cover differential calculus in two and three variables :</p> <ul style="list-style-type: none"> • graphical representations • limit and continuity • partial derivatives and tangent plane • free and constrained optimization problems • multiple integral and change of variables • line integral and Green's theorem
Inline resources	Additional documents on Moodle .
Faculty or entity in charge	SC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Chemistry	CHIM1BA	4		
Minor in Scientific Culture	MINCULTS	4		
Bachelor in Biology	BIOL1BA	4		
Bachelor in Geography : General	GEOG1BA	4		
Minor in Statistics, Actuarial Sciences and Data Sciences	MINSTAT	4		