






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"> <li>• Elements of matrix calculus (what is needed for the extrema of a function of several variables: determinant and eigenvalues).</li> <li>• 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).</li> <li>• Introduction to vector analysis (parametric curves and surfaces, line and surface integrals, divergence and rotational, Stokes type theorems).</li> </ul>
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"> <li>• knowledge and understanding of the various mathematical objects and methods in the course,</li> <li>• the accuracy of the calculations,</li> <li>• the quality of the writing of the answers.</li> </ul>
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"> <li>• graphical representations</li> <li>• limit and continuity</li> <li>• partial derivatives and tangent plane</li> <li>• free and constrained optimization problems</li> <li>• multiple integral and change of variables</li> <li>• line integral and Green's theorem</li> </ul>
Inline resources	Additional documents on <a href="#">Moodle</a> .
Faculty or entity in charge	SC

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Chemistry	<a href="#">CHIM1BA</a>	4		
Master [120] in Data Science : Statistic	<a href="#">DATS2M</a>	4		
Minor in Scientific Culture	<a href="#">MINCULTS</a>	4		
Bachelor in Biology	<a href="#">BIOL1BA</a>	4		
Bachelor in Geography : General	<a href="#">GEOG1BA</a>	4		
Minor in Statistics, Actuarial Sciences and Data Sciences	<a href="#">MINSTAT</a>	4		