

6.0 credits

30.0 h + 45.0 h

2q

Teacher(s) :	Claeys Tom ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<p>Sources of errors in numerical analysis, propagation of errors. Direct and iterative methods for the resolution of linear systems. Numerical resolution of non-linear systems. Numerical integration. Part of the exercices will be devoted to the study of a computer program in numerical analysis. This activity will lead to a project for which a numerical problem has to be solved using the computer program. This course gives also the opportunity to give numerical solutions to problems met in other courses.</p>
Aims :	<p>The goal of the course is the presentation and discussion of basic methods for the numerical resolutions of problems, in particular for solving equations. Besides the construction of numerical methods starting from basic principles, the course will contain an introduction to the analysis of errors and to the evaluations of the efficiency of methods. Summarizing, the aim is to understand why and how the methods work, which are the limitations and which precision one can expect. This should enable the students to use programs and software used in numerical computations.</p> <p><i>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".</i></p>
Evaluation methods :	The evaluation will be made on the basis of a written exam and a project realized during the year.
Content :	The following subjects will be considered: calculus of errors, direct and iterative methods of resolutions of linear systems, numerical resolution of non-linear systems, numerical integration.
Bibliography :	A. Quarteroni, R. Sacco, L. Saleri, Méthodes numériques pour le calcul scientifique
Cycle and year of study :	> Bachelor in Mathematics > Bachelor in Physics
Faculty or entity in charge:	MATH