UCL Faculté des sciences

SC

MATH2172 Analyse numérique Ib Résolution numérique des équations

[22.5h+30h exercises] 4 credits

This course is taught in the 2nd semester

Teacher(s): Paul Van Dooren
Language: french
Level: 2nd cycle course

Aims

To better understand numerical methods for solving equations and to analyze their numerical properties such as convergence and stability. Equations solvers include finding zeros, solving systems of equations and solving ordinary differential equations.

Main themes

Numerical solution on non-linear equations: location of real and complex zeros of a polynomial, iterative methods and convergence theorems.
Numerical solution of linear systems : iterative methods (conjugate gradients, Jacobi, Gauss-Seidel, Krylov methods), preconditioning.
Numerical solution of ordinary differential equations : multistep methods, stability analysis, stiff differential equations.

Other credits in programs

INFO22	Deuxième année du programme conduisant au grade d'ingénieur civil informaticien	(4 credits)	
MAP21	Première année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(4 credits)	Mandatory
MATH21/G	Première licence en sciences mathématiques (Général)	(4 credits)	
STAT2MS	Master en statistique, orientation générale, à finalité spécialisée	(6 credits)	