Faculty of Sciences

MAT1151   Numerical analysis : tools and software of calculus

[30h+45h exercises] 7 credits

This course is taught in the 2nd semester

Teacher(s):	Pierre Bieliavsky
Language:	French
Level:	First cycle

Aims

Besides the construction of numerical methods starting from basic principles, the course will present an introduction to the theory of errors and the evaluation of efficiency of the algorithms presented. This should lead the student to be able to use programs and software used in numerical computations.

Main themes

Theory of errors in numerical analysis, direct and iterative methods of resolutions of linear systems numerical resolutions of non-linear systems, numerical integration and numerical resolution of ordinary differential equations. Part of the exercces will be devoted to the knowledge of a particular software in numerical analysis. This activity will lead to a project consisting into the numerical resolution of a specific problem. This course gives also the opportunity to give numerical solutions to problems met in the other courses.

Content and teaching methods

The following subjects will be considered : calculus of errors, the direct and iterative methods of resolutions of linear systems, the numerical resolution of non-linear systems, the numerical integration and the numerical resolution of ordinary differential equations

Other credits in programs

MATH11BA	Première année de bachelier en sciences mathématiques	(7 credits)	Mandatory
PHYS11BA	Première année de bachelier en sciences physiques	(7 credits)	Mandatory
SINF12BA	Deuxième année d'études de bachelier en sciences informatiques	(7 credits)	