



INMA2325 Ordinary differential equations

[30h+15h exercises] 4 credits

This course is taught in the 2nd semester

Teacher(s): Patrick Habets, Jean Mawhin
Language: French
Level: Second cycle

Aims

This course aims to introduce boundary value problems for ODE and the related analysis method.

Main themes

The Cauchy problem
 Boundary value problems

Content and teaching methods

The Cauchy problem : Existence, uniqueness, continuous dependence

Boundary value problems :

- Phase plane analysis.
- Contraction method (Banach Theorem).
- Compactness method (Schauder Theorem).
- Monotony method (positive operator, lower and upper solutions).

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisite

The course INMA 2315 "Compléments d'Analyse" is a prerequisite. It is advisable to work this material together with MATH 2111.

Other credits in programs

MAP21	Première année du programme conduisant au grade d'ingénieur (4 credits) civil en mathématiques appliquées	Mandatory
MAP22	Deuxième année du programme conduisant au grade (4 credits) d'ingénieur civil en mathématiques appliquées	
MAP23	Troisième année du programme conduisant au grade (4 credits) d'ingénieur civil en mathématiques appliquées	
MATH21/E	Première licence en sciences mathématiques (Economie (4 credits) mathématique)	Mandatory