UE Partial differential equations and numerical methods

Level
Baccalaureate +4

ECTS
6 credits

Component
UFR IM2AG (informatique, mathématiques et mathématiques appliquées)

Semester
Automne

- **Teaching language(s):** English
- **Teaching type:** Lectures
- **Open to exchange students:** Yes
- **Code d'export Apogée:** GBX7AM11

Presentation

Description

Contents:

- Types of equations, conservation laws
- Finite differences methods
- Laplace equation
- Parabolic equations (diffusion)
- Hyperbolic equations (propagation)
- Non linear hyperbolic equations

This course include practical sessions.

This is a two parts course, this part is the course mutualized with Ensimag 2A 4MMMEDPS.

Objectives

The aim of this cours is to give an overview of modelling using partial differential equations.

Course parts

TD	Tutorials (TD)	16,5h
TP	Practical work (TP)	16,5h
CM	Lectures (CM)	16,5h

Recommended prerequisites

Basic notions of real analysis, including Taylor formula, functions of several real variables and partial derivatives Methods for solving first order ordinary differential equations (linear case, variation of constants method, separable ODEs…) Basic notions on Fourier series and Fourier transform

Period : Semester 7

Évaluation initiale / Session principale - Épreuves

Libellé	Nature de l'enseignement	Type d'évaluation	Nature de l'épreuve	Durée (en minutes)	Nombre d'épreuves	Coefficient de l'épreuve	Remarques
	Teaching Unit (UE)	CT	Written - supervised work	120		100/100	

Seconde chance / Session de rattrapage - Épreuves

Libellé	Nature de l'enseignement	Type d'évaluation	Nature de l'épreuve	Durée (en minutes)	Nombre d'épreuves	Coefficient de l'épreuve	Remarques
	Teaching Unit (UE)	CT	Written or Oral			100/100	

Additional information

UE portée par l'ENSIMAG.

Nécessite de prendre conjointement l'UE Partial differential equations and numerical methods 2

Skills

Modeling of systems using PDE.

Numerical resolution.

Theoretical study.

List of courses

	Nature	CM	TD	TP	Crédits
Partial differential equations and numerical methods	OTHER	16,5h	16,5h		
Partial differential equations and numerical methods complementary	OTHER			16,5h	

Useful info

Contacts

Program director

Eric Blayo

Eric.Blayo@grenoble-inp.fr

Place

Grenoble

Campus

Grenoble - University campus