

# 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 course 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

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## Skills

Modeling of systems using PDE.

Numerical resolution.

Theoretical study.

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## 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

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### Contacts

Program director

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### Place

➤ [Grenoble](#)

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### Campus

➤ [Grenoble - University campus](#)