

MATH-469

Parabolic and hyperbolic PDE's

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Cursus	Sem.	Type
Ing.-math	MA2, MA4	Opt.
Mathematics for teaching	MA2, MA4	Obl.
Mathématicien	MA2, MA4	Opt.

Language of teaching	English
Credits	5
Session	Summer
Semester	Spring
Exam	Written
Workload	150h
Weeks	14
Hours	4 weekly
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Summary

1. PARABOLIC EQUATIONS: Existence and uniqueness of weak-solutions, Maximum principle. Fundamental solutions. Infinite speed of propagation. 2. HYPERBOLIC EQUATIONS: Existence and uniqueness of weak solutions. Fundamental solutions. Finite speed of propagation.

Content**I. PARABOLIC EQUATIONS**

1. Existence and uniqueness of weak-solutions.
2. Maximum principle.
3. Fundamental solutions. Infinite speed of propagation.
4. Separation of variables for a rectangle domains. The asymptotic behaviour of solutions as time goes to infinity.

II. HYPERBOLIC EQUATIONS

1. One dimensional investigation.
2. Existence and uniqueness of weak solutions.
3. Fundamental solutions.
4. Finite speed of propagation.
5. Separation of variables for a rectangle domains. The asymptotic behaviour of solutions as time goes to infinity.

Learning Prerequisites**Required courses**

MATH-407: Elliptic PDE's.

Assessment methods

Exam written

Dans le cas de l'art. 3 al. 5 du Règlement de section, l'enseignant décide de la forme de l'examen qu'il communique aux étudiants concernés.