MATH-469 **Parabolic and hyperbolic PDE's**

Cursus	Sem.	Type
Ing.-math	MA2, MA4	Opt.
Mathématicien	MA2	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	

Remark

pas donné en 2019/20

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.

Teaching methods

To balance the theoretical part, sometimes one hour of exercices is replaced of one hour of class.

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.