- Faculté des sciences
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Matroid theory (3MT2066)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Bachelor en mathématiques	**Cours: 2 ph** **Exercice: 2 ph**	**oral: 30 min**	6
Bachelor en sciences et sport (mathématiques)	**Cours: 2 ph** **Exercice: 2 ph**	**oral: 30 min**	6
Master en mathématiques	**Cours: 2 ph** **Exercice: 2 ph**	**oral: 30 min**	6
Pilier principal B A - mathématiques	**Cours: 2 ph** **Exercice: 2 ph**	**oral: 30 min**	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante:

Lecturer: Relinde Jurrius

Assistant: Alberto Ravagnani

Objectifs:

A matroid is a combinatorial object that generalizes the notion of "independence". Two examples of matroids are a set of vectors in a vector space with the notion of linearly independent, and the set of edges of a graph with the notion of cycle free -- but not all matroids come from vectors or graphs. In this course we learn about matroid theory: an active area of mathematics that uses ideas from abstract and linear algebra, geometry, combinatorics and graph theory.

Contenu:

Matroids and related concepts (rank, independent set, basis, circuit, flat, ...), cryptomorphic definitions, deletion & contraction, minors, duality. Several classes of matroids will be studied in more detail.

Forme de l'évaluation:

Oral exam of 30 minutes.

Documentation:

The course uses the book "Matroids: a geometric introduction" by Gary Gordon and Jennifer McNulty (available at amazon.de).

Pré-requis:

Linear algebra

Forme de l'enseignement:

Per week: 2 hours of lectures (in English) and 2 hours of exercise session. Students are expected to weekly hand in written homework.