

MATH-602

**Inference on graphs**

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Cursus	Sem.	Type
Mathematics		Opt.

Language of teaching	English
Credits	3
Session	
Exam	Oral
Workload	90h
<b>Hours</b>	<b>60</b>
Lecture	20
Practical work	40
<b>Number of positions</b>	

**Frequency**

Every year

**Remark**

Next time in 2024/25

**Summary**

The class covers topics related to statistical inference and algorithms on graphs: basic random graphs concepts, thresholds, subgraph containment (planted clique), connectivity, broadcasting on trees, stochastic block models and perceptron models. Requirement: basics of probability and statistics.

**Content**

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The class will have lectures and projects consisting of papers presentations, potential problem extensions and reports.

**Keywords**

Inference on graphs, learning on graphs, random graphs, community detection, clustering, perceptron, neural networks, spectral graph theory.

**Learning Prerequisites****Required courses**

A basic class on probability and statistics

**Learning Outcomes**

- Understand the material of the class and related papers.

**Resources****Bibliography**

Notes on "Random graphs" and monograph on "Community detection and stochastic block models" by E. Abbe. List of papers.

### Ressources en bibliothèque

- [Community detection and stochastic block models / Abbé](#)

### Moodle Link

- <https://go.epfl.ch/MATH-602>