MATH-516

Applied statistics

Mhalla Linda

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

Language of teaching	English
Credits	5
Withdrawal	Unauthorized
Session	Summer
Semester	Spring
Exam	During the semester
Workload	150h
Weeks	14
Hours	**4 weekly**
Lecture	1 weekly
Exercises	3 weekly
Number of positions	

Il n'est pas autorisé de se retirer de cette matière après le délai d'inscription.

Summary

The course will provide an overview of everyday challenges in applied statistics through case studies. Students will learn how to use core statistical methods and their extensions, and will use computational and problem-solving tools to provide reproducible solutions for the problems presented.

Content

The course will be problem-based, but solutions to the problems may require ideas and tools from areas such as smoothing, regression analysis, statistical modelling (likelihood methods) and model selection, time series analysis, spatial and functional data analysis, extreme value analysis, causal discovery, and statistical consulting.

Keywords

Causal discovery. Classification methods. Extreme value models. Model selection. Parametric and non-parametric regression models. Time series.

Learning Prerequisites

Required courses

Regression Methods, Statistical Computation and Visualisation.

Recommended courses

Time series, Statistical Inference.

Learning Outcomes

By the end of the course, the student must be able to:

- Propose suitable statistical solutions for real-world problems
- Apply suitable statistical solutions for real-world problems
- Assess / Evaluate the adequacy of a statistical method for a given task
- Report results clearly in writing and orally to different types of stakeholder

Transversal skills

- Give feedback (critique) in an appropriate fashion.
- Take feedback (critique) and respond in an appropriate manner.
- Communicate effectively with professionals from other disciplines.
- Access and evaluate appropriate sources of information.
- Write a scientific or technical report.

Teaching methods

One hour of lectures per week, plus three hours of work on mini-projects.

Expected student activities

Students will work on several mini-projects.

Assessment methods

Contrôle continu
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.

Supervision

Office hours	No
Assistants	Yes
Forum	No

Resources

Moodle Link

- https://go.epfl.ch/MATH-516