

BIO-449

Understanding statistics and experimental design

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Cursus	Sem.	Type
Civil & Environmental Engineering		Opt.
Electrical Engineering		Opt.
Life Sciences Engineering	MA1, MA3	Opt.
Neuro-X minor	H	Opt.
Neuro-X	MA1	Opt.
Neuroscience		Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	
Exam	Written
Workload	120h
Weeks	14
Hours	4 weekly
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Summary

This course is neither an introduction to the mathematics of statistics nor an introduction to a statistics program such as R. The aim of the course is to understand statistics from its experimental design and to avoid common pitfalls of statistical reasoning. There is space to discuss ongoing work.

Content

Sensitivity and Bias
 Statistical Power
 Bayes Theorem and Odds Ratio
 What the t-test measures
 Classical statistical tests
 Experimental design
 Fraud and misconduct of statistics

Learning Prerequisites**Required courses**

Very Basic Mathematics

Assessment methods

written exam

Resources**Moodle Link**

- <https://go.epfl.ch/BIO-449>