

BIO-449

**Understanding statistics and experimental design**

Herzog Michael

<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Bioengineering	MA3	Opt.
Civil & Environmental Engineering		Opt.
Electrical Engineering		Opt.
Life Sciences Engineering	MA1, MA3	Opt.
Neuroscience		Opt.
Sciences du vivant	MA3	Opt.

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

**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