



## Statistics for Empirical Sciences 2022

Umeå University May 16 – 25

### Monday 16/5

13.15-15      MIT.A.216      Introduction – Chapters 1 and 2  
  
Formulating statistical hypotheses. Sample and technical variation.  
Experimental design.

### Tuesday 17/5

13.15-15      MIT.A.346      Statistical measures – Chapters 3 and 4  
  
Central tendency measures, measures of variability and descriptive  
statistics.

### Wednesday 18/5

10.15-12      MIT.A.378      An overview of hypothesis testing – Chapter 5  
  
The different steps in hypothesis testing. Model assumptions, test-  
statistics, confidence intervals and p-values.

13.15-15      MIT.A.216      Test on frequencies – Chapter 6  
  
Chi-square tests and Fishers exact test

### Thursday 19/5

10.15-12      MIT.A.216      Test when we have two populations – Chapters 7 and 8  
  
Test equal means: t-test related and unrelated samples (and related  
confidence intervals), Wilcoxon signed rank test, Mann-Whitney U tests.  
Test of proportions and related confidence intervals.

13.15-15      MIT.A.216      Bootstrap and one way ANOVA – Chapter 9  
  
Test and confidence intervals using bootstrap. One way ANOVA.

**Friday 20/5**

13.15-15      MIT.A.346      Correlation and multiple linear regression – Chapters 10 and 11  
Pearson correlation, Spearman correlation, linear regression, model assumptions, R-square.

**Monday 23/5**

13.15-15      MIT.A.356      Correlation and multiple linear regression – Chapters 10 and 11  
Multiple linear regression, model selection, logistic regression (if we have time).

**Wednesday 25/5**

10.15-12      MIT.A.356      Course evaluation and a short examination.

Course literature:

[Biomeasurement: A Student's Guide to Biological Statistics](#), Dawn Hawkins. There are several editions all of them work for this course.

**Teacher**

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