



## Statistics for Life Sciences September 2012

Umeå University September 27<sup>th</sup> – September 5<sup>th</sup>

### Wednesday 5/9

15.15-17 KE37 Introduction – Chapters 1 and 2 (PR)  
Formulating statistical hypotheses. Biological and technical variation. Experimental design.

### Thursday 6/9

13.15-15 KE37 Statistical measures – Chapters 3 and 4 (PR)  
Central tendency measures, measures of variability and descriptive statistics.

### Friday 7/9

13.00-14.45 KE37 An overview of hypothesis testing – Chapter 5 (PR)  
The different steps in hypothesis testing. Model assumptions, test-statistics, confidence intervals and p-values.

### Monday 10/8

13.15-15 KE37 Test on frequencies – Chapter 6 (PR)  
Chi-square tests and Fishers exact test

### Tuesday 11/8

15.15-17 KE37 Test when we have two populations – Chapters 7 and 8 (PR)  
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.

### Wednesday 12/9

13.15-15 KE37 Bootstrap and one way ANOVA – Chapter 9 (PR)  
Test and confidence intervals using bootstrap. One way ANOVA.

**Thursday 13/9**

13.15-17 KE37

Correlation and multiple linear regression – Chapters 10 and 11

Pearsons correlation, Spearmans correlation, linear regression, model assumptions, R-square.

Multiple linear regression, model selection, logistic regression (if we have time) and course evaluation.

Course literature:

[Biomeasurement: A Student's Guide to Biological Statistics](#), Dawn Hawkins (basically a newer edition of the book below)

or

[Biomeasurement: Understanding, Analysing and Communicating Data in the Biosciences': A Student's Guide to Biological Statistics](#), Dawn Hawkins

## Teachers

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