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Processing and analysis of Biological data BIOS14, 30 Oct. 2017 - 12 Jan., 2018

Department of Biology, Lund University

Course aims: To gain a basic understanding of statistical and probability theory, be introduced to the most commonly-used statistical methods within biology, to understand the assumptions associated with each statistical test, to gain practical experience in using these tests in either SPSS or R, and to learn how to choose the appropriate test for a given dataset.

Course leader: Jessica Abbott, jessica.abbott@biol.lu.se

Other Teachers: Per-Erik Isberg, John Waller

Location:

Teaching activities: L (lecture), E (exercise), Exam

Compulsory activities on this course are marked with C: If you are absent from a compulsory activity without a valid reason you are not guaranteed to complete this part until the next time the course is offered. A valid reason is e.g. that you are ill, but not that you are travelling!

Literature:

[Before the introduction meeting you should read the documents "House information and Safety Regulations" and "Plagiarism and Cheating policy"](#)

[You can also read about Student rights and guidelines](#)

[Learning platform Live@Lund](#)

Date	Time	Activity		Description	Teacher	Location
Mo. 30 Oct.	9.30-10.00	L	C	Introduction, compulsory	JKA	
	10.15-12.00	L		Introduction to R	JKA	
	13.15-16.00	E		Introduction to R (exercise)	JKA	
We. 1 Nov.	9.15-12.00	L		Introduction to statistics	PEI	
	13.15-16.00	E	C	General introduction to software	JKA, JW	
Mo. 6 Nov.	9.15-12.00	L		Binomial and Poisson distribution	PEI	
	13.15-16.00	E	c	File and data manipulation	JKA, JW	
We. 8 Nov.	9.15-12.00	L		Estimation, normal distribution, CGS	PEI	
	13.15-16.00	E	c	Descriptive statistics and graphs	JKA, JW	
Mo. 13 Nov.	9.15-12.00	L		Hypothesis testing and power analysis	PEI	
	13.15-16.00	E	c	Hypothesis testing and power analysis	JKA, JW	
We. 15 Nov.	9.15-12.00	L		Regression	PEI	
	13.15-16.00	E	c	Linear regression, model I and II	JKA, JW	
Mo. 20 Nov.	9.15-12.00	L		Multiple and non-linear regression	PEI	
	13.15-16.00	E	c	Multiple and non-linear regression	JKA, JW	
We. 22 Nov.	9.15-12.00	L		One-way ANOVA	PEI	
	13.15-16.00	E	c	ANOVA, testing assumptions, power	JKA, JW	
Mo. 27 Nov.	9.15-12.00	L		Multifactor ANOVA	PEI	
	13.15-16.00	E	c	Multifactor ANOVA	JKA, JW	
We. 29 Nov.	9.15-10.00	L	c	Introduction to mid-term exercise	JKA	
	10.00-12.00	E	c	Individual work on exercise	JKA, JW	
	13.00-14.00	E	c	Individual work on exercise	JKA, JW	
	14.00-15.00	E	c	Feedback groups	JKA, JW	
	15.00-16.00	L	c	Discussion session	JKA	
Tues. 5 Dec.	9.15-12.00	L		Block designs and repeated measures	PEI	
	13.15-16.00	E	c	Block designs, repeated measures, ANCOVA	JKA, JW	



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We. 6 Dec.	9.15-12.00	L		Analysing frequencies	PEI	
	13.15-16.00	E	c	Tables, χ^2 -tests and G-tests	JKA, JW	
Tues. 12 Dec.	9.15-12.00	L		GLM and logistic regression	PEI	
	13.15-16.00	E	c	Log-linear modelling and logistic regression	JKA, JW	
We. 13 Dec.	9.15-12.00	L		Multivariate analysis: Clusters, PCA and Discriminant Analysis	PEI	
	13.15-16.00	E	c	Cluster analysis, PCA and Discriminant Analysis	JKA, JW	
Mo. 18 Dec.	9.15-12.00	L		Survival analysis	PEI	
	13.15-16.00	E	c	Survival analysis	JKA, JW	
We. 20 Dec.	All day	Exam		Exam is posted on Live@Lund	JKA	
Fr. 12 Jan.	All day	Exam	c	Exam is due, send to JKA via email	JKA	