

SEMESTER II
LSM2253 APPLIED DATA ANALYSIS IN ECOLOGY AND EVOLUTION

Prerequisite: ST1232

Weekly contact workload: 2 lecture hours + 2 tutorial hours

Course description:

Research design and analysis of ecological and evolutionary data are fundamental skills for environmental biology. This module will provide students with the skills and knowledge to design and perform statistical analyses on typical research projects in environmental biology. The students will also learn to conduct analysis using R. This will allow them to analyze and address quantitatively ecological and evolutionary information which will be of help when undertaking their UROPS and FYP.

S/N	Topics	Lecture hours
1	The importance of statistics in ecology and evolution.	2
2	Review of basic concepts.	2
3	Experimental design in ecology and evolution.	2
4	Introduction to R.	2
5	Univariate tests and statistical computing.	2
6	Linear and multiple regression.	2
7	ANOVA and ANCOVA.	2
8	Generalized Linear Models.	2
9	Difficulties of ecological data: spatial and temporal correlation.	2
10	Multivariate statistics in ecology and evolution.	2
11	Mixed-effects models.	2
12	Generalized mixed-effects models.	2
	Total lectures :	26 h
	Practicals:	24 h
	Total hours:	50 h

TEXTBOOK (Reference books):

Crawley, M. J. (2002) Statistical Computing. An Introduction to Data Analysis using S-Plus. Wiley. Chichester, England, UK.

Zuur, A. F., Ieno, E. N. and Smith, G. M. (2007) Analysing Ecological Data. Springer. New York.

MODE OF ASSESSMENT: 70% CA (50% practical tests, 20% group project), 30% final exam.

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