Advanced Applied Statistics (C003812)

Course size (nominal values; actual values may depend on programme)

Credits 3.0   **Study time** 90 h

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	English	Gent	lecture
			seminar

Lecturers in academic year 2023-2024

Vanreusel, Ann	WE11	lecturer-in-charge
Sabbe, Koen	WE11	co-lecturer

Offered in the following programmes in 2023-2024	crdts	offering
Master of Science in Marine and Lacustrine Science and Management	3	A

Teaching languages

English

Keywords

Descriptive statistics, design of an experiment, ANOVA, regression, Cluster and ordination

Position of the course

To teach in theory and practice the basic statistical analysis that are most frequently used in quantitative aquatic ecological research.

Contents

The purpose of the course is to introduce some frequently applied univariate and multivariate statistical methods in quantitative research for students with only elementary mathematical background. The theoretical part is focused on the application and the interpretation of the analysis. The practical exercises aim to get familiar with statistical programs and free software R in order to apply these techniques and discuss the results in a correct and extensive way. The techniques dealt with are parametric ANOVA, correlation analysis and non parametric alternatives, Multiple regression, and multivariate analysis like cluster techniques, MDS and PCA.

Initial competences

- Basic statistical principles of distributions and probabilities.
- Excel

Final competences

The most widely used uni- and multivariate statistical techniques in ecological orientated research.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture

Extra information on the teaching methods

Theoretical classes followed by PC classes to practice in Excel and R software (use of software, application and interpretation)

Learning materials and price

Course notes 7 EURO
Minerva
Electronic handbooks

References

ZAR JH Biostatistical analysis

Course content-related study coaching

Assistance during practical exercises
Feedback though minerva

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Skills test, Written assessment

Examination methods in case of periodic assessment during the second examination period

Skills test, Written assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

The examen consists of several questions which are mainly practical orientated but needs to be solved written (not on a computer)
In general there are three types of questions
1 Give definitions or explain background of techniques (without formulas)
2 interprete in a complete and correct way the output of statistical tests
3 identify correct experimental designs and statistical analysis in order to test particular hypothesis
In addition also PC exercices have to be made

Calculation of the examination mark

written exam: 80%
PC oefeningen 20 %