

## Advanced Applied Statistics (C003812)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

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

**Credits** 3.0      **Study time** 90 h      **Contact hrs** 39.0 h

### Course offerings and teaching methods in academic year 2021-2022

A (semester 2)	English	Gent	online seminar: practical PC room classes	0.0 h
			seminar: practical PC room classes	25.0 h
			lecture	15.0 h

### Lecturers in academic year 2021-2022

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

### Offered in the following programmes in 2021-2022

<a href="#">Master of Science in Marine and Lacustrine Science and Management</a>	<b>crdts</b>	<b>offering</b>
	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

Lecture, seminar: practical PC room classes, online seminar: practical PC room classes

**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 through minerva

**Evaluation methods**

end-of-term evaluation

**Examination methods in case of periodic evaluation during the first examination period**

Written examination, skills test

**Examination methods in case of periodic evaluation during the second examination period**

Written examination, skills test

**Examination methods in case of permanent evaluation****Possibilities of retake in case of permanent evaluation**

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 interpret 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 exercises have to be made

**Calculation of the examination mark**

written exam: 80%  
PC oefeningen 20 %