Advanced Applied Statistics (C003812)

Valid as from the academic year 2020-2021

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)

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
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<tbody>
<tr>
<td>3.0</td>
<td>90 h</td>
<td>39.0 h</td>
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</table>

Course offerings and teaching methods in academic year 2020-2021

A (semester 2) English Gent

<table>
<thead>
<tr>
<th>lecture</th>
<th>seminar: practical PC room classes</th>
<th>online seminar: practical PC room classes</th>
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<tbody>
<tr>
<td>15.0 h</td>
<td>25.0 h</td>
<td>0.0 h</td>
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</tbody>
</table>

Lecturers in academic year 2020-2021

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

Offered in the following programmes in 2020-2021

| 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

(Draft -- caution, this is not the final version)
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 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 %

(Draft -- caution, this is not the final version)