

Course Specifications

Valid as from the academic year 2020-2021

Biostatistics (C000134)

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 5.0 Study time 150 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	Dutch	Gent	teaching method	hours
			seminar: practical PC room classes	45.0 h
			lecture	15.0 h
			online lecture	0.0 h

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

programme	crdts	offering
Bachelor of Science in Biology	4	A
Preparatory Course Master of Science in Biology	4	A

Teaching languages

Dutch

Keywords

Populations and samples, experimental designs, descriptive statistics, t-tests, ANOVA, regression analysis, non-parametric tests, clusteranalysis, ordination.

Position of the course

- To get insight in de conditions for data collection in order to get a reliable statistical analysis and interpretation.
- To illustrate the importance and application of descriptive statistical methods in function of a preliminary data-exploration. To illustrate the importance of data transformations.
- To apply and interprete the most widely used univariate statistical analyses in biology.
- To give an introduction to some widely used multivariate analysis.
- These objectives are an essential basis to train a student as a critical and independently working scientist and researcher.

Contents

- 1 Populations and samples: By means of biological case studies the importance of statistically sound sampling and experimental designs is illustrated including aspects of hypothesis formulation, replication, randomisation, sample size.
- 2 Experimental designs : By means of examples different experimental designs will be explained focussing on their (dis)advantages, possible pitfalls and their relation to statistical analysis.
- 3 Descriptive statistics : Graphical and statistical options are explained in function of a preliminar data-exploration including measures of central tendency, variation and dispersion. The importance and the effect of transformations will be illustrated too. Univariate statistical tests including ANOVA, correlation, regression will be explained focussing on their application in biological research by means of case studies from different disciplines.
An introduction is given to the application and use of multivariate techniques in biological research.

Initial competences

General statistical knowledge in terms of distributions and probability calculus.

Final competences

- 1 To apply and interpret the most important univariate and multivariate statistical tests.
- 2 To independently develop a sample or experimental setup.
- 3 This knowledge is essential in order to perform the bachelor thesis.

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 lecture, online seminar: practical PC room classes

Extra information on the teaching methods

omwille van COVID19 kunnen gewijzigde werkvormen uitgerold worden indien dit noodzakelijk blijkt

Learning materials and price

Course note's
10 EURO
Free software R

References

- 1 Zar J.H. Biostatistical analysis

Course content-related study coaching

Assistency during practical exercises
Sessions via ICT

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

examination during the second examination period is possible

Extra information on the examination methods

omwille van COVID19 kunnen gewijzigde werkvormen uitgerold worden indien dit noodzakelijk blijkt

Calculation of the examination mark

80% theory and 20% practicals