



Cursusomvang (nominale waarden; effectieve waarden kunnen verschillen per opleiding)

Studiepunten 5.0 **Studietijd** 125 u **Contacturen** 60.0 u

Aanbodssessies en werkvormen in academiejaar 2017-2018

A (semester 1) hoorcollege 15.0 u
werkcollege: PC-klasoefeningen 45.0 u

Lesgevers in academiejaar 2017-2018

Thas, Olivier LA10 Verantwoordelijk lesgever

Aangeboden in onderstaande opleidingen in 2017-2018

	stptn	aanbodssessie
Master of Science in Nutrition and Rural Development (afstudeerrichting Human Nutrition)	5	A
Master of Science in Physical Land Resources (afstudeerrichting Land Resources Engineering)	5	A
Master of Science in Nutrition and Rural Development (afstudeerrichting Rural Economics and Management)	5	A
Master of Science in Physical Land Resources (afstudeerrichting Soil Science)	5	A
Master of Science in Nutrition and Rural Development (afstudeerrichting Tropical Agriculture)	5	A
Master of Science in Aquaculture	5	A
Master of Science in Environmental Sanitation	5	A
Master of Science in Food Technology	5	A
Master of Science in Nutrition and Rural Development	5	A
International Master of Science in Rural Development	5	A
Uitwisselingsprogramma bio-ingenieurswetenschappen: landbouwkunde (niveau master - na - bachelor)	5	A
Uitwisselingsprogramma bio-ingenieurswetenschappen: Food Science and Nutrition (niveau master-na-bachelor)	5	A
Preparatory Course Master of Science in Business Economics	5	A
Preparatory Course Master of Science in Business Engineering	5	A
Vorbereidingsprogramma tot Master of Science in Business Engineering	5	A

Onderwijstalen

Engels

Trefwoorden

Statistics, analysis of variance, regression analysis, statistical inference

Situering

In general, the course aims to reach the following end terms:

Knowledge: knowledge on basis statistical data analysis techniques

Skills: the student will be able to translate a research question into a statistical problem, which he/she can solve using basic statistical methods. In particular, these methods are related to the analysis of means (e.g. t-tests, ANOVA) and regression analysis. The student will be capable of performing the data analysis, and of interpreting the results, and he will be able to translate these conclusions back to the context of the original research question.

Emphasis is put on the exercises, most of which are on PC with statistical software.

The examples and exercises are based on case studies relevant to the students work environment. In particular, examples are selected from food science, food technology, aquaculture and environmental sciences. The practicals are organised in groups. Depending on the number of students, the groups are made as homogeneous as possible in terms of the scientific interest of the students. Each group gets a different set of exercises so as to make the exercises as relevant as possible for each group.

Inhoud

1. Descriptive statistics (means, medians, percentiles, ...)
2. Some common distributions: normal, binomial, multinomial
3. Basics of statistical inference: confidence intervals and statistical hypothesis tests
4. Statistical tests for association in contingency tables
5. Comparison of 2 means (t-test and Mann-Whitney test)
6. Comparison of k means (F-test and Kruskal-Wallis test)
7. Multiple comparison of means (Tukey, Duncan, Bonferroni,..)
8. 2-way ANOVA and interaction
9. Multiple way ANOVA
9. Simple and multiple regression analysis

Begincompetenties

A basic knowledge of calculus and probability theory (random variables, probability and distributions) is required.

Eindcompetenties

- 1 The student understands the basics of statistical data exploration and statistical inference.
- 2 The student can perform basic statistical data analyses using the software R.
- 3 The student recognises important problems in the study design/analyses and knows how these may affect the conclusions from the statistical data analysis.
- 4 The student can correctly report the results of a statistical data analysis in a scientific report.

Creditcontractvoorwaarde

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

Examencontractvoorwaarde

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

Didactische werkvormen

Hoorcollege, werkcollege: PC-klasoefeningen

Toelichtingen bij de didactische werkvormen

Theory: lectures

Exercises: seminars, including practical PC room classes

Leermateriaal

Slides and course notes are available. Further material is provided through Minerva.

Referenties

J. Neter, M. Kutner, C. Nachstheim, W. Wasserman. 'Applied Linear Statistical Models', 5th edition. McGraw-Hill Education, 2005

Vakinhoudelijke studiebegeleiding

During the exercise sessions the students are coached by assistants. Through the electronic learning environment (Minerva) students can exchange questions and answers outside lecture hours among themselves and with lecturers. Individual questions may be answered during a meeting with the lecturer after making an appointment.

Evaluatiemomenten

periodegebonden en niet-periodegebonden evaluatie

Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Schriftelijk examen met open vragen, openboekexamen

Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Schriftelijk examen met open vragen, openboekexamen

Evaluatievormen bij niet-periodegebonden evaluatie

Schriftelijk examen met meerkeuzevragen, werkstuk

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is enkel mogelijk in gewijzigde vorm

(Goedgekeurd)

Toelichtingen bij de evaluatievormen

At the written final examination the student gets questions related to data analysis problems. The student gets also output from statistical software that can be used. The questions merely relate to the interpretation of the output and the formulation of the conclusions. Some parts of the questions assess the understanding of the student of the relation between the theory and the application.

The mid-term test has shorter questions, aiming at assessing the understanding of the student of the very basics of statistics.

The student also gets a project assignment, which consists of a data set that has to be analysed for finding answers to the substantial research question that has lead to the data. The students may work in groups of no more than four students. The student has to submit a report that will be evaluated. The focus is on the interpretation and good statistical practice.

Eindscoreberekening

The total mark is a weighted average of

* final exam (14/20)

• project assignment (4/20)

• mid-term test about halfway in the semester: 2/20

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.