



Categorische data-analyse (C002880)

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

Studiepunten 5.0 Studietijd 150 u Contacturen 62.5 u

Aanbodssessies en werkvormen in academiejaar 2018-2019

A (semester 1)	Engels	hoorcollege	22.5 u
		groepswork	32.5 u
		werkcollege: PC- klasoefeningen	7.5 u
B (semester 1)		hoorcollege	22.5 u
		groepswork	32.5 u
		werkcollege: PC- klasoefeningen	7.5 u

Lesgevers in academiejaar 2018-2019

De Neve, Jan	PP01	Verantwoordelijk lesgever
Loeys, Tom	PP01	Medelesgever

Aangeboden in onderstaande opleidingen in 2018-2019

	stptn	aanbodssessie
Master of Science in Bioinformatics (afstudeerrichting Systems Biology)	5	B
Uitwisselingsprogramma Bioinformatics (niveau master)	5	B

Onderwijstalen

Engels

Trefwoorden

Categorical data analysis, generalized linear models

Situering

This course builds on 'Principles of Statistical Data Analysis' to enable students to understand and apply the most frequently used methods of categorical data analysis. It is in turn one of the courses that prepares for the course on data mining, epidemiology, and survival analysis.

This fits in with the following learning outcomes of the master program: M.1.2., M.1.3., M.1.4., M.1.5., M.1.6, M.1.7., M.2.1., M.2.4., M.2.5., M.3.1., M.4.3.

Inhoud

- Distribution and inference for categorical data
- Analysis of contingency tables with approximate and exact methods
- Generalised linear models
- Logistic regression
- Ordinal logistic regression, Proportional odds models
- Multinomial logistic regression
- Poisson regression, negative binomial regression, zero-inflated models
- Loglinear models for (paired) tables
- Generalized additive models

Begincompetenties

Basic knowledge of probability and mathematical statistics. Basic material from the course 'Analysis of continuous data'.

Eindcompetenties

- 1 The student can report accurately the results and limitations of a categorical data analysis.

- 2 The student has theoretical knowledge about the most frequently used methods of categorical data analysis.
- 3 The student can correctly interpret and critically assess the results of a categorical data analysis.
- 4 The student can select appropriate statistical methods for categorical data analysis.
- 5 The student participates actively and works constructively in a group context to solve problems involving categorical data analysis.
- 6 The student has practical skills to analyze real-world datasets with categorical responses.

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

Groepswerk, hoorcollege, werkcollege: PC-klasoefeningen

Toelichtingen bij de didactische werkvormen

Exercises: PC-labs (using R) with written tutorials and feedback material.

Leermateriaal

A pdf version of the course notes is freely available via Minerva. Estimated cost of the printed version: 10 EUR

Referenties

Agresti A. (2002). *Categorical Data Analysis*. New York: Wiley.
Nelder J.A & McCullagh P. (1989). *Generalized Linear Models*. CRC press.

Vakinhoudelijke studiebegeleiding

PC-projects and independent work are supported by (written) R tutorials with feedback during the lectures.

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

Werkstuk

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is mogelijk

Toelichtingen bij de evaluatievormen

Periodical evaluation: written (open book)

Permanent evaluation: written (open book)

The periodical exam aims to assess if the student understands the basic theory of categorical data analysis. A part of the exam consists of exercises that involve the interpretation of given software output. The take home independent work takes the form of small-scale data-analytic projects, intermixed with small computational problems.

Eindscoreberekening

Permanent evaluation (25% of the final score) takes the form of three take home problem sets for group work. In addition, there is an exam during the exam period at the end of the semester (75% of the final score). When the student scores less than 10/20 for one of the components, he/she can no longer pass the entire course unit. If the total score is a mark of ten or more out of twenty, then this is reduced to the highest failing mark (9/20). For failed students who want a retake in the second examination period, the permanent evaluation will take the form of a data-analytic project.