

Statistical Data Processing (E003230)

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

Credits 3.0 Study time 90 h Contact hrs 30.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 2)	Dutch	seminar: coached exercises	6.25 h
		seminar: practical PC room classes	8.75 h
		lecture	15.0 h

Lecturers in academic year 2018-2019

De Belie, Nele TW14 lecturer-in-charge

Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Science in Civil Engineering	3	A
Bachelor of Science in Electromechanical Engineering	3	A
Master of Science in Urbanism and Spatial Planning	3	A
Preparatory Course Master of Science in Biomedical Engineering	3	A

Teaching languages

Dutch

Keywords

sample characteristics, hypotheses, regression analysis, analysis of variance

Position of the course

Contents

- descriptive statistics: classification of data, frequency table and graphical presentation, sample characteristics (average, standard deviation, moments, fractiles), distribution
- confidence intervals
- test of hypotheses: mean, variance, theoretical distributions, classification tables (incl. discussion of the necessary distribution functions: t, F, χ^2 , etc.)
- analysis of variance (ANOVA)
- simple linear regression analysis, correlation
- design of experiments; factorial experiments
- multiple comparison of means
- multiple regression analysis
- model building and validation

Initial competences

Final competences

- 1 Design an experiment
- 2 Analyse the outcome of the experiment using frequency tables and graphical representation
- 3 Suggest suitable statistical models
- 4 Estimate model parameters
- 5 Describe trends in data and find correlations using regression analysis
- 6 Be able to carry out analysis of variance and multiple comparison of treatment means
- 7 Decide based on a limited sample, using appropriate hypothesis tests
- 8 Elaborate and interpret a statistical analysis of data, using statistical software

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: coached exercises, seminar: practical PC room classes

Learning materials and price

References

- Walpole R.E., Myers R.H., Myers S.L., Ye K. (2007). Probability and statistics for engineers and scientists. London, Pearson Education, ISBN 0-13-204767-5.
- Howitt D., Cramer D. (2004). Statistiek met SPSS 11 voor Windows. Pearson Education Benelux, ISBN 90-430-0843-5.
- Johnson R., Freund J., Miller I. (2011). Probability and statistics for engineers (8th edition). Boston, Prentice Hall - Pearson Education, ISBN 0-321-69498-8.
- Mendenhall W., Sincich T. (2007). Statistics for engineering and the sciences (5th edition). London, Pearson education LTD, ISBN 0-13-187706-2.
- Norusis M.J. (2008). SPSS 16.0 guide to data analysis. Upper Saddle River, Prentice Hall, ISBN-13: 978-0-13-606136-6.

Course content-related study coaching

Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination

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

Written examination

Examination methods in case of permanent evaluation

Written examination, report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Extra information on the examination methods

During examination period: written exam, closed-book for theory and open book for exercises; exam SPSS.

During semester: graded project reports.

Calculation of the examination mark

Combination of evaluation of report of project and test made with statistical software (40%) and written examination (theory and exercises: 60%).

If one does not participate in one of the parts of the evaluation, it is not possible to pass for this course. In case the final score would still be 10 or more on 20, this will be reduced to the highest no-pass score (9/20).