

BSS premaster Statistics and Research Methodology

Concise course texts

Statistics I – dr. D. van Ravenzwaaij

Statistics deals with summarizing the information in observed quantitative data (descriptive statistics) and with to what extent results from a sample can be generalized to a population of interest (inferential statistics). In this course, basic knowledge of descriptive statistics (mean, standard deviation, frequency, proportion and correlation) is assumed, and the focus is on inferential statistics. A general introduction into the basic reasoning underlying statistical inference is given, and the two most common procedures, significance testing and estimation with confidence intervals, are explained. Specific applications of these procedures are given for the simple situations of comparison of means and comparison of proportions.

Literature:

Statistical Concepts (4th ed.), Lomax, R. G., & Hahs-Vaughn, D. L., ISBN 978-0-415-88007-7.

Statistics II – dr. A. de Raadt

Along the same lines as in Statistics I, in this course inferential procedures are described for more complex comparisons of means, as well as for methods relating variables to each other. Specifically, in this course first the analyses of means in one-way and two-way designs are treated, using the ANOVA model. Next, the concept of correlation between variables, as well as the concepts of regression of one variable on one or more other variables (Multiple regression) are introduced and treated in depth, along with the associated inferential procedures.

Literature:

- Statistical Concepts (4th ed.), Lomax, R. G., & Hahs-Vaughn, D. L., ISBN 978-0-415-88007-7.
- Applying regression & correlation, Miles, J., & Shevlin, M., ISBN 978-0-7619-6230-4.
- C.J. Albers (2016), Inference for Correlations. Will be provided at the start of the course.

Statistics III – dr. A. de Raadt

Continuing where Statistics II ended, this course discusses some new topics as well as some known topics in more depth. The main topics are: multiple regression and ANOVA (more in depth), nonlinear regression, ANCOVA and Repeated Measures ANOVA. The course exam will include both open questions as well as multiple choice items that will cover the entire course material.

Literature:

- Statistical Concepts (4th ed.), Lomax, R. G., & Hahs-Vaughn, D. L., ISBN 978-0-415-88007-7.
- Applying regression & correlation, Miles, J., & Shevlin, M., ISBN 978-0-7619-6230-4.

Research methods: theory and ethics – dr. A. Sarampalis

This course introduces and deepens experimental design and data analysis. On the basis of case studies, pitfalls in design are discussed. Emphasis is placed on finding the appropriate design for a given research question, the practicalities of data handling, and the ethical responsibilities of the researcher.

Literature:

All freely available online. Specified once the course is about to start (October 2021).

Test theory – prof. dr. R.R. Meijer

This course gives an overview of the central topics that are important for understanding how tests are developed and validated. Topics include: historical developments and applications of tests, the administration of tests, reliability and validity, and new developments in the field of test construction.

Literature:

- Psychological testing: A practical introduction (3rd ed), Thomas P. Hogan, ISBN 978-1-11855412-8.
- Additional texts made available online

Qualitative research Methods – A.F. Kievitsbosch, MSc

Students will become familiar with the basic principles of qualitative research methods, methods of data collection (especially interviews, observation, analysis of documents and analysis of visual data) and data-analysis (especially grounded theory coding, content analysis, discourse analysis).

Literature

Flick, Uwe (2018). *An introduction to qualitative research*. Edition 6 (Los Angeles: Sage). ISBN 978-1526445650.

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