

Degree programme Master of Science in Health Sciences 19 th Module 2 nd Semester (Part B)	
Name of module	Advanced Study Design and Data Analysis
Module responsible	Prof. Dr. Ralf Reintjes
Lecturers	Prof. Dr. Joachim Westenhoefer Prof. Dr. Ralf Reintjes
Semester	Summer Semester (March - August)
Status	Optional (Part B), at least 4 Modules from Part B
Frequency/ Period of time	Yearly/ Within one semester
Credit Points (CP)	3 CP
Workload for Students (h)	Workload 90h: presence 30h, private study 60h
Entry Requirements	Basic knowledge in Epidemiology and Biostatistics
Max. Participants	25
Language	English
<p>Objectives</p> <p>Development of competencies (<i>Professional, Technical, Methodological</i>)</p> <p>The student can obtain following competencies:</p> <ul style="list-style-type: none"> • Understanding more advanced study designs, evaluate the appropriateness of different study designs depending on the research question and apply the appropriate statistical analyses of these design, • Planning and analyzing different study designs appropriately, • Using statistical software for planning and analyzing a variety of study designs. <p>Personal and social skills</p> <p>The student is able to:</p> <ul style="list-style-type: none"> • Apply the acquired skills and knowledge in different scientific contexts, • Develop study design to assess own research questions, 	

- Work in groups,
- Present results in oral and written format.

Content of module

- Within-subjects Designs (Repeated Measurement-Designs and ANOVA, including Cross-over Designs)
- Multivariate Analysis (Multiple Regression Analysis, General Linear Model) including Dummy Coding and Interaction terms
- Cluster Randomized Trials
- Birth Cohort Design
- Sample Size Calculation

Related module

Epidemiology I, II (BA),
 Infectious Epidemiology,
 Non-communicable Disease Epidemiology

Teaching and Learning Strategies/ Methodology/ Media

Lecture, Practical in Application of Statistical Software, Case Studies, group work with oral presentations

Assessment(s)

Written examination or written assignment

Literature/ Working material

Campbell MK, Elbourne DR, Altman DG. CONSORT statement: extension to cluster randomised trials. *BMJ* 2004; 328(7441):702-708.

Cohen et al. (2002) *Applied Multiple Regression/ Correlation Analysis for the Behavioral Sciences* (Third Edition). Lawrence Erlbaum.

Fitzmaurice, Garrett, Davidian, Marie, Verbeke, Geert and Molenberghs, Geert, ed (2008). *Longitudinal Data Analysis*. Boca Raton, FL: Chapman and Hall/CRC.