

**Course Syllabus:**

**Quantitative Methods II 7,5 credits**

**General data**

<b>Code</b>	TUR010F
<b>Subject/Main field</b>	
<b>Cycle</b>	Third cycle
<b>Orientation (name)</b>	Quantitative Methods II
<b>Credits</b>	7.5
<b>Progressive specialisation</b>	G1N , First cycle, has only upper-secondary level entry requirements
<b>Answerable institution</b>	Economics, Geography, Law and Tourism
<b>Established</b>	2019-05-15
<b>Date of change</b>	2021-02-25
<b>Valid from</b>	2021-02-15

**Aim**

The course Quantitative Methods II is an advanced faculty-wide course for doctoral students with intermediary and advanced levels of statistical knowledge. The course aims at offering doctoral students a comprehensive and in-depth understanding of advanced quantitative statistical analysis techniques. The course introduces a broad range of knowledge in advanced quantitative techniques and assists in practicing related analytical skills. By doing so, the course is providing both, the theoretical and methodological conditions for developing doctoral students as independent and critical researchers in the quantitative Social Science domain. The aim of the course is for doctoral students to understand the potentials of advanced quantitative methods and to be able to interpret related statistical results correctly.

## Course objectives

After completing the course, doctoral students will

- Have an increased understanding about the state of the art of advanced quantitative methods in the field of Social Sciences.
- Critically assess and propose principles for data collection, advanced analysis designs and the appropriate choice of advanced quantitative methods relevant for the analysis of quantitative data in the social science domain.
- Master advanced quantitative methods related to the course content and link them to state of the art research in the field.
- Appropriately synthesize and integrate advanced quantitative methods into the ongoing PhD thesis project.

## Content

After an overview of multi-variate methods and basic principles of data examination, the course starts with a recapitulation of multiple regression and factor analytical research designs, respectively. The main part of the course discusses advanced multi-variate dependence and independence techniques, respectively. Within the domain of dependence techniques, the course covers multiple discriminant analysis, logistic regression, multivariate analysis of variance and conjoint analysis and extended regression methods beyond OLS-based techniques such as multilevel modelling and panel data analysis. Within the domain of independence techniques, the course covers cluster analysis, multidimensional scaling and correspondence analysis. Moreover, by moving beyond basic techniques, the course introduces into linear structural equation modelling, focusing on the testing of measurement theory (confirmatory factor analysis) and on the testing of structural theory (structural modelling). All multivariate analysis techniques are practiced in a supervised lab-setting employing SPSS® (Statistical Package for the Social Science), Stata® and AMOS® (Analysis of Moment Structures) using real-world data.

## Entry requirements

To be admitted to the course, the candidate should be enrolled in a postgraduate program. Most importantly, the candidate should have successfully completed an introductory course on quantitative methods and possess well-grounded knowledge and analytical skills related to basic statistic techniques, such as correlation, T-test, analysis of variance, regression and factor analysis, respectively. A candidate permanently employed at Mid Sweden University can be offered a place on postgraduate courses with vacancies, provided that requirements for eligibility and other conditions have been fulfilled and that the person participates in the course within the terms of his/her employment.

## Selection rules and procedures

The selection process is in accordance with the Higher Education Ordinance and the local order of admission.

## Teaching form

Teaching is conducted in the form of lectures, supervised labs and independent individual studies. Finally, the students themselves work through course readings.

## Examination form

Individual examination consists of a written assignment, where doctoral students chose and apply relevant advanced methods for the analysis and interpretation of data material. Data has either already been collected by the student or will be provided by the lecturer.

## Grading system

Fail (U) or Pass (G)

## Course reading

### Required literature

**Author:** Clark, Tom S. and Drew A. Linzer

**Article title:** Should I Use Fixed or Random Effects?

**Journal:** Political Science Research and Methods

**Year/Volume/nr/pages:** 2015/3/2/399-40

**Author:** Hair, Joseph (Jr.), Black, William, Babin Barry, & Anderson, Rolph

**Title:** Multivariate Data Analysis

**Edition:** 7th edition

**Publisher:** Pearson Education Limited, Essex, UK

**Comment:** ISBN!KOLON! 10!KOLON! 1-292-02190-X

**Author:** Hatcher, Larry

**Title:** Advanced Statistics in Research: Reading, Understanding, and Writing Up Data Analysis

**Edition:** 1st edition

**Publisher:** Shadow Finch Media LLC, Michigan

**Comment:** 10!KOLON! 9780985867003

**Author:** Kline, Rex

**Title:** Principles and Practice of Structural Equation Modeling

**Edition:** 4th edition

**Publisher:** The Guilford Press, New York

**Comment:** 10!KOLON! 146252334X

**Author:** Mehmetoglu, Mehmet & Jakobsen, Tor Georg  
**Title:** Applied statistics using Stata: a guide for the social sciences  
**Edition:** 1st Edition, published 2016  
**Publisher:** Sage Publications Ltd  
**Comment:** ISBN!KOLON! 10!KOLON! 1473913233

**Author:** Sarwono, Jonathan  
**Title:** Advanced Statistics: Made Easy Using IBM SPSS  
**Edition:** 1st edition  
**Publisher:** Independently published  
**Comment:** 10!KOLON! 1973192748

**Author:** Vogt, Paul & Johnson, Burke  
**Title:** Dictionary of Statistics & Methodology - A Nontechnical Guide for the Social Sciences  
**Edition:** 5th edition  
**Publisher:** SAGE Publication, Washington DC, et al.  
**Comment:** 10!KOLON! 9781483381763

**Author:** Wooldridge, Jeffrey, M.  
**Title:** Introductory Econometrics  
**Edition:** 2013  
**Publisher:** Cengage Learning. EMEA. Can be found as pdf  
**Comment:** Can be found as pdf

Scientific reports, articles, etc., are communicated and provided at the beginning of the course.