

**The Faculty of Psychology**  
**University of Bergen**  
Module in the training programme for researchers

Elective PhD Methodology Course offered by the Graduate School of  
Human Interaction and Growth (GHIG)

**Quantitative methods, topic 3:**  
**Multivariate methods for PhD students**  
19-21 March 2014

Course leaders:  
Nora Wiium (UiB)  
Åge Diseth (UiB)

**Overview**

This course comprises three topics, as follows: Exploratory factor analysis, introduction to confirmatory factor analysis and SEM, and introduction to multilevel analysis

**Objectives**

To provide an introduction to the abovementioned topics, as follows:

***Topic 1 (Mar 19, 2014): Exploratory factor analysis (EFA)***

- This part of the multivariate analysis course will cover the procedures involved in running exploratory factor analysis and will touch on topics such as purpose for EFA, hypothesis testing, type of rotation and identification of latent constructs.
- Data will be used to illustrate the statistical procedures in SPSS while students will also be able to practice on their own data during the session.

***Topic 2 (Mar 20, 2014): Introduction to confirmatory factor analysis and SEM***

- This part comprises an introduction to analysis of multivariate statistics by means of structural equation modeling using AMOS, including confirmatory factor analysis and path analysis, as well as full structural equation models with latent variables.
- Data will be provided for the students to practice on the abovementioned analyses. Students may also practice on their own data during the session.

***Topic 3 (Mar 21, 2014): Introduction to multilevel analysis***

- Students will be introduced to contextual models and its associated terminology including intra-class correlations, fixed vs. random effects, cross-level interactions, and intercepts/slopes-as-outcomes models.
- Data will be provided for the students to practice on the abovementioned analyses in SPSS. Students may also practice on their own data during the session.

**Learning activities**

There will be lectures and hands-on application of statistical analysis on the basis of data provided by the lecturers. Students may also use their own data for statistical analyses.

**Prerequisites**

1. Participants must answer a brief questionnaire when signing up for the course, in order to provide information that allows the course leaders to adjust the breadth and depth of the course topics.
2. Participants must bring their laptop computers with SPSS/AMOS installed.

**Course literature**

PPT slides and other material will be available on MySpace.

Required and recommended literature will be announced.

**Key Readings:**

Beavers, Amy S., Lounsbury, John W., Richards, Jennifer K., Huck, Schuyler W., Skolits, Gary J. & Esquivel, Shelley L. (2013). Practical Considerations for Using Exploratory Factor Analysis in Educational Research. *Practical Assessment, Research & Evaluation*, 18(6). Available online:

<http://pareonline.net/getvn.asp?v=18&n=6>

Byrne, B. M. (2001). *Structural equation modelling with AMOS. Basic concepts, applications, and programming*. London: Lawrence Erlbaum.

Kreft & Leeuw (1998). *Introducing Multilevel Modeling*. London: Sage Publications.

**Time schedule**

January 20, 2014 – registration deadline with brief questionnaire

February 10, 2014 – course literature available on My Space

March 19, 2014: Exploratory factor analysis. Lecturer: Nora Wiium

March 20, 2014: Introduction to confirmatory factor analysis and SEM. Lecturer: Åge Diseth

March 21, 2014: Introduction to multilevel analysis. Lecturers Nora Wiium and Åge Diseth

**Language of instruction:** English and/or Norwegian

**Registration:** Participants must register for the course by January 20, 2014. Maximum number of participants: 20.

**Assessment format:** Active participation and presentations in class.

**ECT: 1 point**

**Course leaders:** Nora Wiium and Åge Diseth

**Eligibility:** PhD students enrolled at the Faculty of Psychology (UiB) have priority, other participants are welcome as space permits. Places will be filled on a first-come-first-serve basis.

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