



Dipartimento
di Statistica
"G. Parenti"

Nei giorni **7, 8 e 9 febbraio 2007**, presso il Dipartimento di Statistica "G. Parenti" in Viale Morgagni 59 a Firenze, la Prof.ssa **Irini Moustaki** (Associate Professor, Department of Statistics, Athens University of Economics and Business) terrà un corso introduttivo sui modelli a variabili latenti dal titolo:

A review of modern multivariate methods

Il corso, di cui si allega il programma, si svolge nell'ambito del Dottorato di Ricerca in Statistica Applicata ed è aperto a tutti gli interessati (si prega di comunicare la partecipazione inviando un messaggio a grilli@ds.unifi.it).

A review of modern multivariate methods

The analysis of multivariate data is part of most quantitative social research projects. Although elementary statistics tells us how to analyze data on single variables, much of the interest in social science lies in the interrelationships between many variables.

Multivariate techniques provide the tools (graphical and model based) for exploring the complex patterns that emerge from the simultaneous analysis of many variables. Examples with real data sets will illustrate the different methods presented.

The lectures aim to expose participants to a variety of modern multivariate methods. The lectures are organized as follows:

Wednesday 7 February (10:00-12:00, aula 32)

- Introduction to latent variable models (aims, objectives, methods, limitations)
- Factor analysis for continuous responses
- Applications

Thursday 8 February (10:00-12:00, aula 32; 14:00-16:00, lab aula A)

- Factor analysis for binary response
- Factor analysis for ordinal responses
- Applications

Friday 9 February (10:00-12:00, aula 32)

- Model-based clustering - Latent class analysis for categorical responses.
- Applications

[Slides](#)

Pre-requisites

A basic knowledge of probability, statistical theory (introductory level), simple and multiple linear regression.

References

- Bartholomew, D.J., Steele, F., Moustaki, I., Galbraith, J. (2002) The analysis and interpretation of multivariate data for social sciences. Chapman and Hall/CRC. **(Applied)**
 - Bartholomew, D.J and Knott, M (1999) Latent variable models and factor analysis. Second edition. Arnold. **(Theoretical)**
 - Skrondal, A. and Rabe-Hesketh, S. (2004). Generalized Latent Variable Modeling: Multilevel, Longitudinal and Structural Equation Models. Boca Raton, FL: Chapman & Hall/CRC. **(Theoretical + applied)**
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Software

Factor analysis for categorical responses and latent class analysis can be performed with software such as LISREL, Mplus, GLLAMM, LatentGold. The program that we will be using is called LAMI and you can download it for free from:

<http://www.cmm.bristol.ac.uk/team/aimdss.shtml>