

## Course of the SIS' school

*Latent Markov models with applications*

Milano, 16 - 20 September 2017

Department of Statistics and Quantitative Methods  
University of Milano-Bicocca

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### Local Organizing Committee

Fulvia Pennoni  
(University of Milano-Bicocca)

### Scientific Committee

Francesco Bartolucci  
(University of Perugia)

Alessio Farcomeni  
(Sapienza University of Rome)

Silvia Pandolfi  
(University of Perugia)

Fulvia Pennoni  
(University of Milano-Bicocca)

*For additional details and student housing*  
<http://www.summerschoolbicocca.com/>

### Administrative Secretary

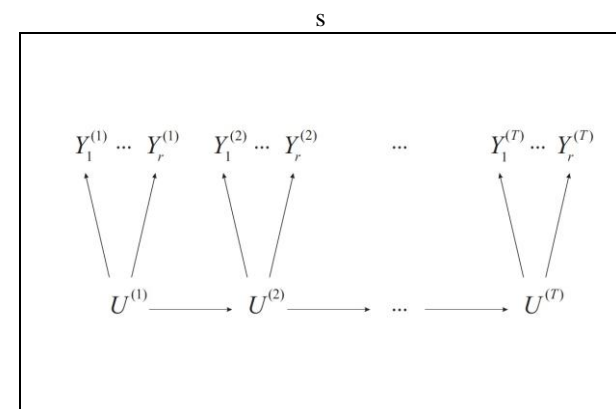
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Italiana di  
Statistica



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The course “*Latent Markov models with applications*” aims at introducing the main basic theory of the latent Markov models for the analysis of longitudinal data. A deep insight of the underlying assumptions, which are based on stochastic processes will be provided. Basic and advanced parameterizations to formulate latent Markov models will be explained also when explanatory variables are available. The inferential procedures will be explained in detail both from a classical and Bayesian inferential perspective. Models for drawing inference from longitudinal and multilevel data will be considered with reference also to incomplete data. During the course, many case studies and applications will be presented by using some suitable R libraries.

The course “*Latent Markov models with applications*” is mainly dedicated to students from academia and it is also intended for experts from industry and consultancy with little or no background in probability who would like to apply latent Markov models. It is devoted to SIS members, researchers as well as Ph.D. students. The course is limited to 70 participants and will be held in English.

#### Location:

Department of Statistics and Quantitative Methods  
University of Milano-Bicocca  
Via Bicocca degli Arcimboldi, 8  
20126 Milano

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For the **application form** please visit SIS web page

<http://www.old.sis-statistica.org/index.php?module=corsi>

The online application form can be done until **July 16, 2017**.

The Scientific Committee will examine the applications and on the basis of the dates of the applications and CV will decide the admission. The **attendance** to the course is subject to the payment of the participation fees indicated below.

		before 04/09/17	after 04/09/17
Participants not belonging to SIS*		750	850
Ordinary SIS members	Ordinary SIS member	300	350
	Ordinary SIS member <i>Under 35 years old</i>	180	230
Institution belonging to SIS	Employee belonging to SIS	300	350
	Employee not belonging to SIS	600	700

\* Values without added tax (VAT)

\*Additional details also related to *scholarships* will be provided at the following link  
<http://www.summerschoolbicocca.com/017-11-markov-models-course.php>

To joint SIS as an ordinary or a junior member see the website: [www.sis-statistica.it](http://www.sis-statistica.it) or contact the Italian Statistical Society (phone: +39066869845).

	Afternoon (14.00-18.00)	Morning (9.00-13.00)	
Saturday, 16 September	Expectation-Maximization (EM) algorithm for model estimation. Model formulation with covariates on the latent part of the model. ( <i>Francesco Bartolucci</i> )	Introduction to latent variable models. Basic features of the latent Markov (LM) model. ( <i>Francesco Bartolucci</i> )	
Monday, 18 September	Model extension for data with a hierarchical structure and related EM algorithm. Model formulation and estimation within a potential outcomes framework. ( <i>Fulvia Pennoni</i> )	Model formulation with covariates on the measurement part of the model, model estimation with the EM algorithm. ( <i>Fulvia Pennoni</i> )	
Tuesday, 19 September	Bayesian model estimation with the Reversible Jump algorithm. ( <i>Silvia Pandolfi</i> )	Multivariate extension. Model formulation in a Bayesian inferential context. ( <i>Silvia Pandolfi</i> )	
Wednesday, 20 September	Generalized linear models based on the LM model. Quantile regression and LM model. ( <i>Alessio Farcomeni</i> )	Bayesian model estimation for the LM model, based on Birth and Death algorithm. LM models with informative drop-out. ( <i>Alessio Farcomeni</i> )	

