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|  | **Italiano** | **English** |
| **Docente/Instructor**  | F. Bartolucci | F. Bartolucci |
| **Titolo/Title**  | Introduzione ai modelli a variabili latenti | Introduction to latent variable models |
| **Contenuti/Contents** | * concetti di base su modelli a variabili latenti: caso discreto e continuo
* algoritmi Expectation-Maximization e Newton-Raphson per la stima
* modelli random-effects
* Item Response Theory
* modelli hidden Markov
 | * basic concepts on latent variable models: discrete and continuous case
* Expectation-Maximization and Newton-Raphson estimation algorithms
* Random-effects models
* Item Response Theory models
* hidden Markov models
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| **Testi/Reading list** | Skrondal, A., Rabe-Hesketh, S. (2004), *Generalized Latent Variable Modeling: Multilevel, Longitudinal, and Structural Equation Models*, Chapman & Hall/CRC, Boca Raton.Bartolucci, F., Farcomeni, A. and Pennoni, F. (2013), *Latent Markov Models for Longitudinal Data*, Chapman and Hall/CRC press. | Skrondal, A., Rabe-Hesketh, S. (2004), *Generalized Latent Variable Modeling: Multilevel, Longitudinal, and Structural Equation Models*, Chapman & Hall/CRC, Boca Raton.Bartolucci, F., Farcomeni, A. and Pennoni, F. (2013), *Latent Markov Models for Longitudinal Data*, Chapman and Hall/CRC press. |
| **Mese/Month\*:**  | 23 Giugno – 11 Luglio | June 23 – July 11 |
| **Nmero di ore / CFU** |  |  |

\*Indicare le possibili settimane di insegnamento