

Statistical modelling (48 hrs)

Module I - Multilevel, mixture, nonlinear models

Multilevel models

Non linear models: general

Non linear models: linearization, transformation, segmentation

Non linear models: estimation (non linear least squares)

Mixture regression models

Module II - Observed and latent causal models

Path analysis

Latent variables: concept and definitions

Factor models

Structural equations models

Partial least squares and component analysis

Module III - Latent Markov Models

Overview on Latent Markov Modeling

Expectation-Maximization algorithm

Latent class model

Markov chain model for longitudinal data

Basic Latent Markov Model

Constrained Latent Markov Models

Including Individual Covariates and Relaxing Basic Model

Including Random Effects and Extension to Multilevel Data

Module IV - Causal inference

Fundamentals of Impact Evaluation

The Fundamental Problem of Causal Inference

Potential Outcomes Framework

Basic Approaches to Identification: Randomized Trials

Basic Approaches to Identification: Selection on Observables

Basic Approaches to Identification: A Panel Data/Repeated Cross Longitudinal Approach:

Difference-in-Differences