## Course 2
### Time Series

#### Program

1. Basic concepts in time series.
   1.1. What is time series analysis?
   1.2. Graphical representation of time series.
   1.3. Types of series.

2. Descriptive methods for time series.
   2.1. Fitting a regression line.
   2.2. Exponential smoothing.
   2.3. Decomposition methods for time series.

3. Linear models for time series.
   3.1. Linear models for stationary series: AR, MA and ARMA.
   3.2. Linear models for seasonal stationary series.
   3.3. Non-stationary ARIMA and seasonal ARIMA models.
   3.4. Box-Jenkins methodology and forecasting.

4. Extensions.
   4.1. Outlier detection and estimation.
   4.2. Case study with missing data.
   4.3. Functional data methods for time series analysis.
   4.4. Time series clustering.

Practical demonstration: R software.

#### Bibliography


#### Prerequisites

The attendant is supposed to be familiar with the R software.