

***Applied MSc in Data Science & Artificial Intelligence***

**“Time Series Analysis by Pr Julien Jacques”**

**Volume of classes hours: 25 hrs** (*± some personal work expected*)

**Course summary:** The course will start with some descriptive statistics and notions specific to time series (trend, seasonality). Then, a first forecasting model will be studied, exponential smoothing, which aims to modelize the deterministic part of the series. The ARIMA models will allow to go further by modelizing also the stochastic components of the series. Finally, some more advanced models will be studied: neural networks, dynamic regression models and models for grouped time series.

**Course Objectives:** To be able to forecast the future of one or several times series

**Theoretical background used:** Basic statistics and probability. Knowledge of R software.

**Technologies Used:** R software

**Course evaluation:** Project consisting in predicting the future of one time series using all the models studied in the course.