

UE2 DATA



Composante
Ecole
d'économie
de la
Sorbonne
(EES)



**Période de
l'année**
Automne

Liste des enseignements

Obligatoire00Matière3.018.0Summary: Through three applications, the course will provide an introduction to Data Science in Finance. Each project (6 hours) will be divided into three sessions: A presentation of the problematic and a discussion about the tools and the methodology that could be used by students. A session during which students work in groups on the project and ask questions (debugging). A presentation of the project to the class by the students. - The first project will consist of creating a WebApp, using Microsoft Azure, Python and MongoDB, to gather and display financial data on a website.- The second project will consist of extracting data from the Wall Street Journal website before implementing natural language processing to automatically convert textual content into quantitative indicators.- The third project will consist of creating a real-time trading strategy by analysing the content published on Twitter about listed companies.The language used for the course is Python.Professor: Thomas Renault (Assistant Professor of Economics - University Paris 1 Panthéon-Sorbonne)Student assessment: Project (submission + presentation)**Matière18.0Summary:** This course is devoted to times series:- First, taken separately, with the treatment stationary dynamics (ARMA models), with potential heteroskedasticity (ARCH effects) and non-linearity (STR Models).- Second, in a multivariate approach, with standard linear models (VAR models and VECM ones in case of cointegration, possibly included in dynamic networks). Principles of Difference-in-Difference (causal) analyses are recalled.Professor : Catherine Bruneau (Professor of Economics - University Paris 1 Panthéon-Sorbonne)Student assessment: Final exam (50%) + numerical implementation related to one of the topics of the course (50%)**Matière18.0Summary:** This course will bring students quantitative skills to be deployed at Fintechs, traditional financial entities and/or regulators. Objective: Reviewing recent advances in econometric theory and economic modelling. Application of those concepts in Python and/or R. Students will be asked to gather financial data from traditional as well as alternative sources. Students will be invited to develop advanced models to propose economic narratives and to exploit results in order to suggest choices to policy makers or investment professionals. Professor: Eric Vansteenbergh (Economist and Researcher - Banque de France)Student assessment: Exam + Quantitative project (in Python)**Matière3.018.0Summary:** The course provides an overview of the following Machine Learning and AI models: Credit Scoring overview Feature identification: PCA and FCA Linear and Logistic regression PCA Regression Regularisation: Lasso, Ridge and Elastic Net Support Vector Machine Bagging and Random Forest Gradient Boosting Neural Networks and Deep Learning Reinforcement Learning Professor: Bertrand Hassani (CEO - Quant AI Lab)Student assessment: Project (in Python or R)