The goal of the course is to introduce students to the main business areas where analytics is used in business. The course is based on use-cases from the financial industry and is meant to give a hands-on experience to students in various domains such as Marketing, Sales, HR, IT, or Compliance.

Content

The different chapters covered in the scope of this course (may be subject to change):

- General overview/concepts of Analytics in Business
- Customer Analytics
- Wealth Management
- Web Analytics
- Compliance/Fraud Analytics
- Risk Analytics
- HR Analytics

Keywords

- Data Science
- Statistics
- Data Analysis

Learning Prerequisites

Important concepts to start the course

- Basic Probability & Statistics
- Machine Learning concepts
- Knowledge of R and/or Python
Learning Outcomes
By the end of the course, the student must be able to:
• Develop a methodology tailored to the problem
• Assess / Evaluate the chosen methodology and approach
• Use programming skills for a given problem
• Identify the adequate analytical methodology to tackle a problem
• Present findings from the analysis
• Formulate a business problem in terms of an analytical one

Transversal skills
• Demonstrate a capacity for creativity.
• Use both general and domain specific IT resources and tools
• Access and evaluate appropriate sources of information.
• Assess progress against the plan, and adapt the plan as appropriate.
• Use a work methodology appropriate to the task.
• Communicate effectively with professionals from other disciplines.
• Demonstrate the capacity for critical thinking

Teaching methods
• First part of the course is dedicated to theoretical concepts, discussion of different use-cases
• Second part of the course consists in applying the knowledge to various problems and datasets using R or Python

Expected student activities
• Attendance and participation in lectures and exercise sessions
• Interactions during class

Assessment methods
• Problem sets accounting for 1/6 of the final grade
• Written exam accounting for 2.5/6 of the final grade
• Group project accounting for 2.5/6 of the final grade

Supervision
Office hours            No
Assistants             No
Forum                  No

Resources
Virtual desktop infrastructure (VDI)
Yes

Bibliography
• The elements of Statistical Learning (Hastie, Tibshirani, Friedman)
• Pattern Recognition and Machine Learning (Bishop)
• Data Science from Scratch (Guru)
• Web Scraping with Python (Lawson)
• Fraud Analytics Using Descriptive, Predictive, and Social Network Techniques: A Guide to Data Science for Fraud Detection (Baesens, Van Vlasselaer, Verbeke)
• Python Machine Learning (Raschka)
• Data Science for Business (Provost, Fawcett)

Ressources en bibliothèque
• Data Science for Business / Provost
• Fraud Analytics Using Descriptive, Predictive, and Social Network Techniques: A Guide to Data Science for Fraud Detection / Baesens
• Python Machine Learning / Raschka
• Web Scraping with Python / Lawson
• The elements of Statistical Learning / Hastie, Tibshirani, Friedman
• Data Science from Scratch / Grus
• Pattern recognition and machine learning / Bishop