Course unit: Data and analytics

Course metadata

- Title in French: Analyses et données
- Course code: tba
- ECTS credits: 3
- Teaching hours: 72h
- Type: specialized course
- Language of instruction: French
- Coordinator: tba
- Instructor(s): Augustin Amann (S4M), Vincent Archer (S4M), Aurélien Poissonier (DGAFP), Régis Chenavaz (Kedge BS), Antoine Winckels (Air France)
- *Last update 24/03/2021 by C. Pouet*

Brief description

This course unit is divided into three parts:

- **Quantitative marketing** (24 hours) taught by Augustin Amann and Vincent Archer,
- **Data and macroeconomics** (24 hours) taught by Aurélien Poissonier,
- **Yield management** (24 hours) taught by Régis Chenavaz and Antoine Winckels.

Learning outcomes

- Know how to use data in a strategic approach
- Know how to present a model, its results and its insights
- Know how to assess data suitability to a specific issue
- Know how to model intertemporal strategic decisions
- Know how to combine model and data to take pricing decisions

Course content

Quantitative marketing

1. Data processing
    - Data: a story of representation
    - Data in business
    - From segmentation to dynamic targeting
2. Marketing from a Data Scientist point of view
    - Context: the data world
    - Scoring
    - Statistics
    - Correlations
    - Automatic learning
    - Supervised classification

- Perspectives

Data and macroeconomics

This course aims at giving a broad view of macroeconomic data. It is structured around three questions:

1. Can we measure everything?
2. Can we sum everything?
3. Can we compare everything?

These questions will allow to tackle multiple sources for macroeconomic data, their methodology, their limits, and to discuss their common applications. At the end of the course, students should have acquired enough hindsight to use pertinent macroeconomic data to answer a practical question.

Yield management

1. Dynamic pricing
   - Modeling firm's intertemporal price-setting decisions
   - The price-quality relationship
   - Modeling project: managerial decision in an intertemporal framework.
2. Application to yield management in air transport
   - Single leg resource management
   - Network resource management
   - Demand forecasting

Bibliography

Check the availability of the books below at Centrale Marseille library.

1. Quantitatve marketing
   - Abiteboul, S., « Sciences des données : de la logique du premier ordre à la Toile », Leçon inaugurale du Collège de France : site de Serge Abiteboul au Collège de France (vidéo et documents de la leçon inaugurale)
2. Data and macroeconomics
   - INSEE
   - Eurostat
   - Datagora
3. Yield management
   - Sorger, G. Reference price formation and optimal marketing strategies, In Optimal Control Theory and Economic Analysis 3, G. Feichtinger (editor), Elsevier Science Publishers (North-Holland, 1988).
   - Talluri, K. T., Van Ryzin, G. J., The Theory and Practice of Revenue Management, Springer 2004.
   - Belobaba, Peter. 16.75J Airline Management, Spring 2006. MIT OpenCourseWare.
   - Frumin, Michael, and Moshe Ben-Akiva. 1.201J Transportation Systems Analysis: Demand and Economics, Fall 2008. MIT OpenCourseWare.

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