Course unit: Models and Decisions

Course metadata

- Title in French: Modèles et Décisions
- Course code: tba
- ECTS credits: 3
- Teaching hours: 72h
- Type: ground course
- Language of instruction: English and French
- Coordinator: tba
- Instructor(s): Dominique Henriet, Christophe Pouet, Clément Depoutre (BNP Paribas), Gaël Leboeuf (Aix-Marseille Université)
- *Last update 27/08/2021 by C. Pouet*

Brief description

This course unit is divided into three parts:

- **Risk and decision** (24 hours) taught by Dominique Henriet and Clément Depoutre
- **Statistics and decisions** (24 hours) taught by Christophe Pouet
- **Corporate finance** (24 hours) taught by Gaël Leboeuf

Learning outcomes

- Understand how to take decision under uncertainty
- Learn how to assess risk and how to compare risky situations
- Learn how to model, estimate and predict time series
- Understand how capital structure affects the value of the firm

Course content

Risk and decision

1. Introduction: diversification and mutualization
2. Risk measure
3. Expected utility
4. Supply and demand: the price of risk
5. The value of information
6. Market & Counterparty Risk Management

Statistics and decisions

1. Reminder on probability: conditional expectation
2. Stochastic processes in discrete and continuous time

3. ARMA process: definition, existence, characteristics (autocovariance, partial autocovariance)
4. Estimation of ARMA processes: identification, parameters estimation and validation
5. Extensions: SARIMA, ARCH and GARCH processes

Corporate finance

1. The Corporation
2. Introduction to Financial Statements Analysis
3. Financial Decision Making and the Law of One Price
4. The Time Value of Money
5. Investment Decision Rules
6. Fundamentals of Capital Budgeting
7. Capital Markets and The Pricing of Risk
8. Optimal Portfolio Choice and the Capital Asset Pricing Model
9. Estimatong the Cost of Capital
10. Capital Structure in a Perfect Market
11. Mergers and Acquisitiions

Bibliography

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

1. Risk and decision
   - course ebook
   - Gollier, C., Schlesinger, H. and Eeckhoudt, L. (2005). Economic and Financial Decisions Under Risk. Princeton University Press
2. Statistics and decisions
   - course handout
   - Brockwell, P.J. and Davis, R.A. (1991). Time Series: Theory and Methods. Second Edition. New York: Springer Verlag.
   - Box, J.E.P. and Jenkins, G.M. (1970). Time Series Analysis; Forecasting and Control. San Francisco: Holden Day.
3. Corporate finance
   - Berk, J. and DeMarzo, P. (2019) Corporate finance. Prentice Hall; 5th edition.
   - Aswath Damodaran at NYU: Course and video materials, formulas, spreadsheets, estimated risk premium, Cost of capital by sector and more.
   - The Vernimmen handbook homepage: Course and video materials, formulas, spreadsheets, corrected exercises and case studies, newsletter, financial data on 7,000 listed companies and more.
   - AMF. Annual reports and legal informations on French listed companies.
   - Yahoo! Finance. Financial data on listed companies.