Course unit: Finance

Beware! Under construction.

Course metadata

- Title in French: Finance
- Course code: tba
- ECTS credits: 4
- Type: advanced course
- Semester 9 (Fall-Winter)
- Teaching period: Mid-November to Mid-February
- Teaching hours: 100h
- Language of instruction: English
- Coordinator: tba
- Instructor(s): Grégoire Hug (WeeFin), Réda Rahal (BNP Paribas), Eddy Aleya (Product owner, ARX Corporate finance), William Benhaim Palmer (Manager, ARX Corporate finance), Sitraka Forler (Post Luxembourg), Lirone Samoun (smartpush)
- *Last update 28/07/2026 by C. Pouet*

Brief description

This course is taught by highly skilled professionals in finance. Some of them are Centrale Méditerranée alumni.

This course unit is divided into four parts:

- **Portfolio management** (24 hours) taught by Grégoire Hug.
- **Financial risk modelling** (24 hours) taught by Réda Rahal: this part is dedicated to credit risk and its role in banking regulation.
- **Applied finance** (24 hours) taught by Eddy Aleya and William Benaim Palmer: this part is about the theoretical aspects of corporate and market finance applied in real life.
- **Data Project: data sources and preprocessing** (20 hours) taught by Sitraka Forler and Lirone Samoun.

Learning outcomes

- Learn what is the asset management industry and what are each player's target
- Understand the portfolio management theory basics – how to build a portfolio
- Cover all major asset classes to have a deep financial culture
- Understand how the supervision financial risks organized
- Know how to model and compute the associated capital charges are computed
- Understand the similarities in the concepts of market and corporate finance
- Understand how finance products can be used to manage risk
- Know how to evaluate and to value a company

Course content

Portfolio management

1. Introduction to portfolio management
    1. The asset management industry
    2. The investment theory basics
    3. Main asset classes
2. Fixed income asset class - basics
    1. Sources of risk and return
    2. Main strategies
    3. Application on a fixed bond
3. Fixed income asset class - advanced
    1. Fixed Income products and associated strategies
    2. Calculation example - fixed bond
    3. Rate curves bootstrapping
    4. Application on a callable bond
4. Back to Equity
    1. Equity Market history and overview
    2. Classic steps in an investment process
    3. Active vs Passive Investment management
    4. Application on an equity European portfolio
5. Alternative asset classes
    1. Currency
    2. Private Equity
    3. Real Estate
    4. Private Debt
    5. Infrastructure
6. Risk and Performance Measurement
    1. Performance Measurement
    2. Risk and Performance Metrics
    3. Risk Measurement
7. Asset allocation
    1. Asset allocation based on investment profile
    2. Capital Protection
8. Innovation in Asset Management
    1. Smart Beta portfolios & passive indexing
    2. Alternative data sources
    3. ESG (intro)
    4. Crypto funds

Financial risk modelling

1. Introduction: bonds and OTC transactions
2. Modeling defaults: structural models and ratings
3. Banking regulation on credit risk; market and counterparty credit risk
4. Overview of the VaR methodologies and pros/cons for each
5. Monte-Carlo techniques applied in Finance

Applied finance

Session 1 (2 hours) – Introduction to Mergers & Acquisitions (M&A) and Strategic Rationale

Overview of the main types of transactions (mergers, acquisitions, leveraged buyouts (LBOs), and divestitures); M&A versus equity financing (shareholder implications, dilution, and appropriate use cases for each option); strategic motivations for acquisitions (synergies, external growth, and market consolidation); key market participants (corporates, private equity firms, and investment banks); and the main stages of an M&A transaction (origination, due diligence, negotiation, and closing). Short case study based on a recent transaction.

Session 2 (2 hours) – Valuation Fundamentals

Overview of the three main valuation approaches: intrinsic valuation (Discounted Cash Flow, DCF), market-based valuation (trading comparables and precedent transactions), and asset-based valuation. Discussion of the appropriate valuation methodology depending on the company's profile: profitable companies (EBITDA multiples) versus high-growth, pre-profitability companies (revenue multiples). Introduction to the Weighted Average Cost of Capital (WACC), beta, and the distinction between Enterprise Value and Equity Value (including the Enterprise Value-to-Equity Value bridge). Introductory valuation exercises.

Session 3 (2 hours) – Discounted Cash Flow (DCF) Valuation in Practice

Building a financial forecast (business plan); estimating Free Cash Flow to the Firm (FCFF); selecting the appropriate discount rate; estimating terminal value (Gordon Growth Model versus Exit Multiple Method); and performing sensitivity analysis. Introduction to Excel through the construction of a guided DCF model.

1. Session 4 (2 hours) – Comparable Company Analysis and Valuation Multiples

Building a peer group using publicly traded companies and precedent transactions; common valuation adjustments (net debt, minority interests, and non-recurring items); selecting appropriate valuation multiples based on industry and company characteristics (EV/EBITDA, EV/EBIT, P/E, and EV/Sales); limitations of the comparable approach and best practices for peer group selection.

Session 5 (1 hour) – Deal Structuring and Acquisition Financing

Introduction to transaction structuring (cash deals versus share deals); fundamentals of leveraged buyouts (LBOs) and financial leverage; the impact of debt financing on shareholder returns; purchase price mechanisms (locked-box versus completion accounts); and key provisions of a Share Purchase Agreement (SPA). Connections with the valuation techniques covered in previous sessions.

Session 6 (3 hours) – Group Case Study in Excel

Comprehensive case study based on a fictional company, NORDIA Industries. The session consists of one hour of guided instruction (case presentation, data package, and methodological framework), one hour of group work (DCF valuation, comparable company analysis, football field valuation, and purchase price recommendation), and one hour of group presentations followed by a collective debrief.

Bibliography

You can check the availability of the books below at Centrale Méditerranée library.

1. Portfolio management
    - Portait, R. and Poncet, P. (2014). Market Finance.
    - Fabozzi, F. J. (2012). The Handbook of Fixed Income Securities.
    - Hull, J. (2021). Options, Futures & Other Derivatives. 11th Edition. Pearson.
2. Financial risk management
    - Jorion, P. (2006). Value at Risk: The New Benchmark for Managing Financial Risk, 3rd Edition. McGraw Hill
    - Gregory, J. (2015). The xVA Challenge: Counterparty Credit Risk, Funding, Collateral, and Capital. Wiley.
    - Roncalli T. (2016). Risk Management & Financial Regulation (website)
3. Applied finance
    - Vernimmen, P. (2021). Finance d'entreprise. Dalloz.
    - Hull, J. (2018). Options, Futures, and Other Derivatives, 10th Edition. Pearson