Number of ECTS credits : 3 Course language : English Course leader : CHARLES Amélie Speakers : MEZERET Thierry

## $\equiv$ course description

This course is the natural continuation of Financial Markets and Financial management taught in semester 1 and 2.

It allows not only to discover new concepts, but also approaches finance from a mathematical and statisitical angle, showing how most financial products originate from or rely on a quantitative basis.

## $\equiv$ COURSE OBJECTIVES

Quantitative finance offers a conceptual framework and mathematical tools to understand a complex and changing financial world.

The presentation of these concepts and mathematical tools will thus be illustrated with examples and applications. A practical presentation of the main statistical and mathematical tools in Excel will also be discussed and practiced.

#### LEARNING GOALS Ξ

LG02 - Analysis : Analyse complex situations LG05 - Action : Evaluate, prevent and manage short, medium and long-term risks LG15 - Cooperation : Act with flexibility, adaptability and intellectual curiosity

#### = TACKLED CONCEPTS

**Stocks Indices** 

Concept of return and risk

Risk measurement (systematic risk, idiosyncratic risk, total risk)

Value-at-risk

CAPM

# LEARNING METHODS

5 sessions of 3 hours each

Exercices

Case studies

# **∃** ASSIGNMENTS

Exercices

### **∃** BIBLIOGRAPHY

Williams (2010), Introduction à la Finance Quantitative, Vuibert.

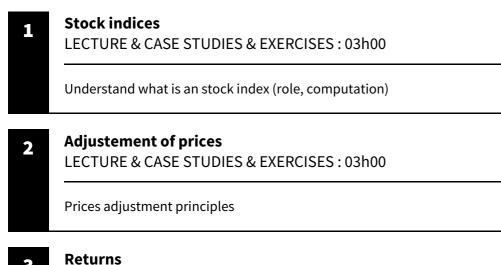
Bossu et Henrotte (2008), Finance des marchés : Techniques quantitatives et applications pratiques, Dunod.

Hull (2007), Gestion des risques et institutions financières, Pearson

# $\equiv$ EVALUATION METHODS

100 %: Examen

### $\equiv$ sessions



#### 3

LECTURE & CASE STUDIES & EXERCISES : 03h00

Returns (definition, computation, annualization,...)

# Risk LECTURE & CASE STUDIES & EXERCISES : 03h00

Ex-post risk

Ex-ante risk

Parkinson's volatility

Skewness

Kurtosis

Downside risk

VaR

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# САРМ

### LECTURE & CASE STUDIES & EXERCISES : 03h00

Total risk, specific risk and market risk

CAPM