S3FIN463_2017
QUANTITATIVE FINANCE

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

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.

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

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

EVALUATION METHODS

100 % : Examen

SESSIONS

1

Stock indices
LECTURE & CASE STUDIES & EXERCISES : 03h00

Understand what is an stock index (role, computation)

2

Adjustement of prices
LECTURE & CASE STUDIES & EXERCISES : 03h00

Prices adjustment principles

3

Returns
LECTURE & CASE STUDIES & EXERCISES : 03h00

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

4 Risk

LECTURE & CASE STUDIES & EXERCISES : 03h00

Ex-post risk

Ex-ante risk

Parkinson's volatility

Skewness

Kurtosis

Downside risk

VaR

5 CAPM

LECTURE & CASE STUDIES & EXERCISES : 03h00

Total risk, specific risk and market risk

CAPM