MSc. Finance/CLEFIN
2018/2019 Prep Course

Quantitative Methods for Finance
Professors Massimo Guidolin and Daniele Bianchi

COURSE OBJECTIVES

The course introduces basic concepts from real analysis, calculus, applied optimization, and key ideas on the structure and functioning of financial markets.

A portion of the classes will take place in the lab also to prepare students to the type of applied and problem solving approach of a few compulsory courses of the MSc. programme.

The course has two types of audiences:

1. Students who want to review concepts already encountered before but who value having them refreshed and ready more than the time required to attend the prep-course in August.

2. Students who self-assess that they may presenting from "holes" in their background with reference to one or more of the topics/lectures listed below.

PRECISE TIME SCALE AND SUPPORTING MATERIALS

The slides covered in the course is outlined in the _lecture slides and notes made available via the class website_, at:

http://didattica.unibocconi.eu/mypage/map.php?IdUte=135242&idr=14063&lingua=eng

(yes, please scroll to the middle). Lecture notes and class presentations of the material should be taken as a guidance for further study on the textbooks indicated below.

Blume, L., and C., Simon, 2010, _Mathematics for Economists_, W.W. Norton & Co.

Chiang, A. C, _Fundamental Methods of Mathematical Economics_. Mc-GrawHill-Irwin, 1984 (first edition).

Guidolin, M., and M., Pedio, 2016, _Essentials of Applied Portfolio Management_, EGEA and Bocconi University Press.

Jackson, M., and M., Staunton, 2001, _Advanced Modelling in Finance Using Excel and VBA_, John Wiley & Sons Inc.

Topic	Dates IT	Dates ENG	Useful for:	Readings
1. Functions on $\mathbb{R}$, limits, derivatives and differentials, integration	Aug. 22	Aug. 22-23	20188 and 20189, 20135, 20191	Simon-Blume, chapters 2-4 and 12; Chiang, chapters 2, 6, 7, 8 + slide set 1
2. Vectors and Matrices with applications in Excel	Aug. 23	Aug. 23	20135, 20191 and 20192	Simon-Blume, chapters 8, 9 and 10; Jackson and Staunton, chapters 1-2 + slide set 2
3. Brief review of optimization methods with applications in Excel	Aug. 26	Aug. 26	20135, 20191, 20192	Chiang, chapters 9, 11 and 12; Jackson and Staunton, chapter 6 + slide set 3
4. Brief introduction to utility theory under certainty and uncertainty Axioms of choice under certainty Preference representation theorem and its meaning Expected utility theorem Uniqueness of EU preferences up to monotone increasing linear transforms	Aug. 28	Aug. 27	20188 and 20135	Guidolin and Pedio, chapter 2 + slide set 4
5. Basic Mean-Variance Analysis	Aug. 29-30	Aug. 29-30 Sept. 2	20135	Guidolin and Pedio, chapters 3 and 4; Jackson and Staunton, chapter 6 + slide set 5

<u>Legend</u>:
20135: Theory of Finance.
20188: Quantitative Finance and Derivatives – Module 1.
20189: Quantitative Finance and Derivatives – Module 2.
20191: Financial Econometrics and Empirical Finance – Module 1.
20192: Financial Econometrics and Empirical Finance – Module 2.