Syllabus
Course description

Course title	Quantitative Finance
Course code	27205
Scientific sector	SECS-P/11
Degree	Bachelor in Economics and Management
Semester and academic year	2nd semestre, ay 2016/2017
Year	Optional
Credits	6
Modular	No

Total lecturing hours	36
Total lab hours	-
Total exercise hours	-
Attendance	suggested, but not required
Prerequisites	No prerequisites, however it is advisable that the students attended the courses of Econometrics and Financial Analysis in order to properly follow these lectures
Course page	http://www.unibz.it/en/economics/progs/bacs/economics/courses/default.html

Specific educational objectives	The course refers to the complementary educational activities chosen by the student and belongs to the scientific area of Economics.
	The course provides coverage of important topics in modern Quantitative Finance and Investments at the advanced undergraduate level. Particular attention is given to the topics such as the stock market returns models, asset pricing theory and empirical applications, mutual and hedge funds analysis, liquidity and trading, term structure, portfolio theory and practice. The course will enable the students to develop the theoretical knowledge and practical skills required for coping with various problems encountered in modern financial markets. To provide a practice-oriented approach, the theoretical material will be heavily interlaced with R-programmed empirical examples and applications.

Lecturer	Dmitri Boreiko Office E302 e-mail: dmitri.boreiko@unibz.it Tel: 0471/013277 http://www.unibz.it/en/economics/people/StaffDetails.html?personid=1070&hstf=1070
Scientific sector of the lecturer	SECS-P/09

Teaching language	English
Office hours	please refer to the lecturer's web page
Lecturing assistant	Not foreseen
Teaching assistant	Not foreseen
Office hours	Not foreseen
List of topics covered	- Introduction in programming in R - Financial mathematics review - Data mining and overview of financial databases - Data exploration, estimation and simulation in R - Time series analysis - Portfolio optimization and asset pricing models - Cross-sectional analysis of stock returns - Fixed income securities and term structure of interest rates - Derivatives pricing - Mutual and hedge funds analysis
Teaching format	Frontal lectures and computer-based sessions.

Learning outcomes	Knowledge and understanding: - Knowledge of modern finance topics with advanced use of quantitative methods. Understanding and knowledge of the tools necessary to estimate and manage financial markets perplexities. Knowledge how to solve real-world quantitative finance problems using the statistical computing languages R Applying knowledge and understanding: - analyze and solve complex portfolio problems individually and as a member of a group - find the necessary literature and data to solve complex portfolio and general financial problems - being able to program in R in order to solve various problems of quantitative finance Making judgments - Being able to choose the appropriate methods and techniques to be applied in various real-life situations common to financial industry Communication skills - not foreseen Learning skills - being able to understand and find a solution for particular financial problem of a particular investor using analytical reasoning and statistical programming

Assessment	- Open book computer-based exam - Multiple choice questions – 50% - Exercises in R – 50%
Assessment language	English
Evaluation criteria and criteria for awarding marks	Final mark from exam assessment (100%) Relevant for exam assessment: basic knowledge of R language and ability to program the common tasks in it.

Required readings	Selected chapters from: • Gergely Daróczi et al, Introduction to R for Quantitative Finance, Packt Publishing, 2013. • Ágnes Vidovics-Dancs et al. Mastering R for Quantitative Finance, Packt Publishing, 2015. • Paul Wilmott, Paul Wilmott on Quantitative Finance 3 Volume Set, Wiley, Second Edition 2006. • J. Cochrane, Asset Pricing, Princeton University Press, 2005
Supplementary readings	To be defined