

Syllabus

Course Description

Course Title	Financial Mathematics
Course Code	25425
Course Title Additional	
Scientific-Disciplinary Sector	STAT-04/A
Language	English
Degree Course	Master in Accounting and Finance
Other Degree Courses (Loaned)	
Lecturers	Prof. Alex Weissensteiner, Alex.Weissensteiner@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/1080 dr. Silvia Bressan, Silvia.Bressan@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/37763
Teaching Assistant	
Semester	First semester
Course Year/s	1
CP	6
Teaching Hours	36
Lab Hours	-
Individual Study Hours	-
Planned Office Hours	18
Contents Summary	• Purpose: Provision of mathematical concepts and techniques used in the financial industry • Main contents: Pricing of bonds, term structure determination, mechanics and pricing of derivatives (forwards, futures, swaps and options), use of derivatives • Overall: Necessary foundations in order to attend other finance classes in the Master program

Course Topics	Time value of money, interest rate markets and conventions, pricing of bonds, duration and convexity, interest rate term structure determination and yield spreads, mechanics of forward and future markets; determination of forward and future prices; swaps; mechanics of option markets; trading strategies involving options; binomial trees; Wiener processes; Black-Scholes-Merton model; options on stock indices, currencies, and futures; the Greek letters; volatility smile.
Keywords	Interest rates, bonds, forwards/futures, swaps, options
Recommended Prerequisites	
Propaedeutic Courses	
Teaching Format	in-person lectures, exercises
Mandatory Attendance	Suggested, but not required
Specific Educational Objectives and Learning Outcomes	ILO (Intended Learning Outcomes) ILO 1 – Knowledge and Understanding: ILO 1.1 Knowledge of economic and financial planning and evaluation of new investments ILO 1.2 Understanding of the fundamentals of corporate finance for the correct application, for example, of decision-making models and the management of financial data and risks in treasury management ILO 1.3 Knowledge of theories and tools for the economic analysis of firms and markets ILO 1.4 Understanding of basic forecasting models for conducting integrated economic and financial analyses, also using econometric methods for time series and multivariate analysis ILO 2 – Applying Knowledge and Understanding: ILO 2.1 Ability to develop and integrate the results of economic-financial communication into corporate decision-making models ILO 2.2 Ability to design and manage corporate restructuring and other extraordinary operations ILO 2.3 Ability to identify, evaluate, and manage investments in financial markets. ILO 2.4 Ability to design coherent financial management strategies in companies or financial intermediaries, applying acquired knowledge in risk management techniques, asset valuation, and

	derivative handling ILO 3 – Making Judgements: ILO 3.1 Ability to relate models and empirical evidence in the study of companies, intermediaries, and financial markets ILO 4 – Communication Skills: ILO 4 Ability to communicate effectively, both orally and in writing, the specialised content of individual disciplines, using different registers depending on the audience and the communicative and educational purposes, and to assess the educational impact of such communication ILO 5 – Learning Skills: ILO 5.1 Ability to develop general models based on the phenomena studied
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	Written exams after 50% and at the end of the semester.
Evaluation Criteria	The assessment is based on a mid-term exam (33%, applicable for the January exam) and a final exam, where either the better result from 66% of the final exam or 100% of the final exam is considered. After the January exam, the final exam counts for 100% of the evaluation. A minimum score of 18 out of 30 points is required for a positive result.
Required Readings	John Hull: Optionen, Futures und andere Derivate, Pearson, 9th ed, 2017
Supplementary Readings	P. Wilmott, S. Howison and J. Dewynne, The Mathematics of Financial Derivatives: A Student Introduction, Cambridge University Press, 1995 Selected chapters from CFA Institute Curriculum 2018 edition, Level I – III
Further Information	
Sustainable Development	Quality education

Goals (SDGs)	
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