Two-Years Master IN FINANCE AND INSURANCE (120 ECTS)

The Master in Finance and Insurance provides students with in-depth knowledge for the design and management of complex financial and insurance products, for understanding the organization of financial markets, for the definition and management of social security systems and to measure risks relating to individual financial and insurance products.

The curriculum offers advanced courses in mathematical finance, financial econometrics, mathematics for life and non-life insurance, economics of financial markets, financial and insurance law. At the end of the course, graduates in Finance and Insurance have the skills to work within financial institutions and private insurance, authorities that control the market institutions, public pension, or as a consultant for the evaluation and management of complex products and of the risks attached to them. The course also allows achieving the qualification, subject to competition, of actuary.

Expected learning outcomes

The Master in Finance and Insurance aims to develop skills required for the management of complex financial products and to practice the profession of actuary.

In particular, graduates will:
- possess the analytical and quantitative tools to deal with financial transactions characterized by investment risk;
- possess the necessary skills to design and manage complex insurance products, both in the public and the private sector;
- be familiar with the tools to analyze financial and insurance markets as well as the legal knowledge for regulatory and market control purposes.

To achieve the above objectives, the degree provides: in the first year, advanced courses in mathematical finance, financial econometrics, life insurance mathematics, economics of financial markets, and law of financial intermediaries; in the second year, social securities, non-life insurance mathematics and business administration. In addition, the students may choose other activities, laboratories in financial and actuarial sciences and training in public and private institutions, professional firms, in Italy and abroad. The study programme is completed with the production of an original dissertation written in English.

Admission requirements

To attend with profit the master degree course in Finance and Insurance students should have an adequate knowledge of mathematics, economics and statistics acquired with the three-year degree in the class Economic and Business Management Sciences, Economics and Statistics or equivalent qualification obtained abroad, in areas such as economics, finance, business administration, statistics, or mathematics. For graduates of other classes, it is required to hold at least 60 credits earned in Mathematics, Statistics, Informatics, Physics, Engineering Management. A further requirement is a good knowledge of English, both spoken and written. For all the candidates, in addition to the above requirements, admission to the course is subject to the assessment of individual preparation by a committee. The admission test to verify the preparation is of a selective nature and focuses on subjects such as mathematics, financial mathematics, statistics, economics, business administration and English. A special session and a specific committee for the assessment of the personal preparation could be provided for international students.

Necessary requirement to be admitted to attend the master degree course in Finance and Insurance is to pass with profit an admission test to assess the initial preparation of students. The test is of a selective nature and focuses on subjects such as mathematics, financial mathematics, statistics, economics, business administration and English. A special session could be provided for international students.
QUANTITATIVE MODELS IN FINANCE (9 cfu)
The aim of the course is to provide students with the mathematical tools useful to understand and manage some of the most known models employed to describe the dynamics of financial markets. In particular, students will study how to evaluate and manage portfolios of financial securities and financial derivatives.

FINANCIAL ECONOMETRICS (9 cfu)
The aim of the course is to provide students with the quantitative tools prevalently used to analyze and process financial data. The most known models employed to describe the dynamics of financial data across both discrete and continuous time will be illustrated. Students will study some univariate models for volatility (ARCH and GARCH and their extensions to take into account the asymmetries in volatility) and multivariate models. Among the non-linear models, switching Markov models will be analyzed. Computer lab activities will be promoted to implement the theoretical models analyzed and discussed.
PENSION FUNDS AND LIFE INSURANCE MATHEMATICS (9 cfu)
The course will provide students with the actuarial techniques used to: - determine premiums and reserves for life insurance policies, and individual or social pension plans; - evaluate the activity of life insurance companies; - prepare the technical report of a pension fund. Students will also be able to measure and manage the biometric risks underlying life insurance products; furthermore, they will study the directives provided by the regulatory authorities for life insurance companies and pension funds.

BANKING AND FINANCE (12 cfu)
The aim of the course is to provide a deep understanding of the banking behavior and its impact on the financial markets and the economy. After providing an overview of the role and operating of the bank, the course investigates the determinants of financing and lending decisions of the banks and their impact on the credit and market risk. Next, will be investigated the links between banks and financial markets, and the conditions that may transform structural weakness of few financial institutions in a systemic risk. The final part will be devoted to the understanding of the micro-prudential regulation and macro-prudential tools used by central banks and regulators to address bank and systemic risk.

ECONOMICS AND FINANCIAL MANAGEMENT OF INSURANCE COMPANIES (12 cfu)
The course analyzes the insurance sector shedding light on its constitutive aspects, on the strict regulation to which it is subjected, and the management and accounting issues. In the introductory part it describes the concept and the types of risks, specifying the functions performed by the insurance companies in the coverage of such risks. The second part analyzes management profiles of insurance companies stressing their features with respect industrial firms. The third part deepens issues of financial accounting, analyzing the typical items of assets and liabilities of an insurance company.

FINANCIAL AND INSURANCE MARKET LAW (6 cfu)
The course will offer an introduction to international and European insurance and financial market regulation, endeavouring to offer a comparative overview of the regulatory framework included the regulation of Italian companies operating both in insurance and financial markets.

SOCIAL SECURITIES (6 cfu)
The aim of the course is to provide students with the mathematical tools useful to understand public pension funds and with the principles and actuarial methods used in social security.

FINANCIAL MARKETS (12 cfu)
The course provides an introduction to the institutions, markets and securities that form the elements of modern financial systems. Key topics include the functioning of money and security markets, foreign exchange markets and international capital movements. Additional topics are the link between financial markets as well as the links between macroeconomic conditions and the evolution of these markets. Specific attention will be dedicated to the measurement and evolution of market risks. Finally, the determinants of international portfolio diversification, foreign investments, and international banking are studied, as well as the conditions that lead central banks and other financial institutions to operate in these markets.

NON LIFE INSURANCE MATHEMATICS (9 cfu)
The course provides students with the tools employed in the definition of the principles and actuarial techniques in non-life insurance, with special reference to premium and reserve valuations, risk management and reinsurance. An additional objective is to provide students with the tools allowing them to carry out financial report and solvency analyses for non-life insurance companies.

COMPUTER LAB FOR FINANCE (6 cfu)
The course provides students with a computer lab activity aimed at implementing the theoretical models developed in financial and actuarial courses. Specifically, students will use the Matlab software to implement financial models and the Actuar package in R to implement actuarial models.