



**UNIVERSITA' DEGLI STUDI DI MILANO**  
**PROGRAMME DESCRIPTION - ACADEMIC YEAR 2020/21**  
**IN**  
**FINANCE AND ECONOMICS (MEF) - Classe LM-16**  
**Enrolled from 2017/2018 academic year**

### **HEADING**

<b>Degree classification - Denomination and code:</b>	LM-16
<b>Degree title:</b>	Dottore Magistrale
<b>Curricula currently available:</b>	QUANTITATIVE FINANCE
<b>Length of course:</b>	2 years
<b>Credits required for admission:</b>	180
<b>Total number of credits required to complete programme:</b>	120
<b>Course years currently available:</b>	1st , 2nd
<b>Access procedures:</b>	open, subject to entry requirements
<b>Course code:</b>	B73

### **PERSONS/ROLES**

#### **Head of Study Programme**

Prof. Alberto Bucci

#### **Tutors - Faculty**

Prof. Emanuele Bacchiocchi (Academic guidance tutor)

Prof. Alessandro Barbiero (Internship tutor and Erasmus and international mobility tutor)

#### **Degree Course website**

<https://mef.cdl.unimi.it>

#### **Degree Course E-mail**

Email: [mef@unimi.it](mailto:mef@unimi.it)

#### **Facebook**

<http://www.facebook.com/mefunimi>

#### **Twitter**

@mefunimi

### **CHARACTERISTICS OF DEGREE PROGRAMME**

#### **Introduction**

With the Master degree in Finance and Economics (MEF), the University of Milan aims at offering an exclusive and high-quality study program. This internationally oriented master degree is thought to provide students with an excellent academic background and practical sense, as well as with a promising outlook for a future career in today's challenging and dynamic financial markets and international economy.

Due to the growing complexity of today's economics and finance, expertise only in economics or, conversely, in quantitative methods are not enough to succeed everyday's challenges. The Master degree in MEF is organized to provide knowledge on both the economic mechanism and the behaviour and history of financial markets, to build solid bases of quantitative and numerical methods and to give insights of decision making under uncertainty and the basics of risk analysis. Indeed, recent and repeated financial crises have proven that mathematical thinking and economical theories cannot be considered separately from historical analyses and regulatory mechanism.

Throughout the program, a well-balanced study track builds strong quantitative skills coupled with a solid knowledge base of the underlying theory of finance and economics. Students acquire the necessary knowledge and skills to use mathematical models to comprehend complex financial problems and learn how to apply these models in the fields of economic sciences and financial market analysis.

Students who enrolled in MEF in the academic year 2019-2020 may choose one of the two curriculum: Financial Economics

or Quantitative Finance. All students enrolling in MEF in the academic year 2020-2021 will have to follow the Quantitative Finance curriculum, due to a temporary suspension of the Financial Economics curriculum. Working closely together with our outstanding faculty, students will benefit from their knowledge and international scientific networks as well as their links with the industry but they might also attend seminars, laboratories and other activities organized yearly by the Department of Economics, Management and Quantitative Methods.

### **General and specific learning objectives**

Graduates of this master course will receive advanced training on quantitative methodologies and tools suitable to interpret and analyze the economic and financial phenomena and to operate directly on financial markets or in international economic institutions. The study program is designed to provide the students with solid background through the development of topics of economic theory, analysis of international financial markets and the theory of decision making under uncertainty. It includes study of financial markets from both the point of view of international law, history and economics.

The first year courses, common to both curricula, also provide for the establishment of capabilities in statistics, mathematics and computational techniques for the analysis of financial data and economic time series.

The second year of the master program is organized in two curricula. The first, Financial Economics (not available to students enrolled in the 2020-2021 academic year due to a temporary suspension of the curriculum), is dedicated to the training of economists capable of operating at international institutions or central government level in both the financial and economic sphere.

The second curriculum, named Quantitative Finance, is aimed at preparing financial specialists capable of operating in the areas of pricing of derivatives, portfolio management, risk management and control in the financial and / or actuarial sector.

### **Expected learning outcomes**

In the spirit of armonization of education within European Union, the graduates of this master program in Finance and Economics are expected to attend the following standards according to the so called Dublin Descriptors:

#### **A. Knowledge and understanding**

Graduates are expected to gain theoretical knowledge and advanced skills on the following areas: economics, mathematics and statistics, corporate and financial law.

For the economic area, topics offered include: monetary economics, advanced micro and macro economics, decisions under conditions of uncertainty. The theories and analytical tools from economics learned will enable students to understand the processes of economic integration and the functioning of markets, the role of multinational corporations and financial institutions.

For the area of mathematics and statistics, the topics include: mathematical and statistical analysis, econometrics, mathematical finance, risk theory, portfolio optimization and optimal control. The students are expected to learn how to perform quantitative analyses for business and economics decision making, management of investments and financial forecasting of macroeconomic scenarios.

For the business and financial area, topics include: corporate finance, business management, economics of markets and financial intermediaries. The knowledge and skills acquired in this area will enable graduates to understand the politics of enterprise management, strategies of internationalization of firms, the principles of corporate finance, the functioning of the financial system, investment decisions and financial risk management.

For the law area the main focus will be on international financial and economic law. The lectures will provide legal expertise to understand the laws that rule the markets and financial institutions and international trade.

#### **B. Applying knowledge and understanding**

Graduates will be able to apply the knowledge and skills acquired to the analysis and management of business tasks posed by the process of economic integration, to the design and implementation of internationalization strategies of firms, to the assessment of the financial and balance sheet, to the identification of policy interventions in the context of open economies (market regulation, competition policies, supervision of financial institutions, etc.); to the mathematical evaluation of investments; to the analysis and forecasting of economic and financial scenarios.

#### **C. Making judgements**

Graduates will gain the ability to make judgments about developing critical skills: the effects and effectiveness of the decisions of firms and financial institutions in which they were to operate, even in reference to the ethical implications of these actions and decisions, the consequences and the effectiveness of economic policies. They will also need to assimilate fully the principles of professional ethics that guide interpersonal relationships in the contexts of employment. They should also learn the fundamental principles of the scientific approach to problem solving in economics and business administration that they will face during their professional activity. The multidisciplinary approach of this course encourages the development of independent judgment and critical thinking by offering students the opportunity to compare methodological approaches in different disciplines. The significant relevance of quantitative methods and their applications to economics and finance, facilitates the comprehension of the scientific approach to problem solving.

#### D. Communication skills

Graduates will be able to present and communicate effectively within the company the results of their work (projects, reporting, analysis, documentation, etc.) Argue their positions and communicate clearly and effectively in writing and oral set up cooperative relationships and collaborative working within groups, proposals and solutions to the problems of working contexts of reference using mathematical and quantitative tools, access to a more specialized audience, for example, through the publication of research results. The ability to communicate effectively in the workplace is primarily gained from the presentation and discussion of case studies. The drafting of reports and essays, as required by some of the courses, and the writing of the final dissertation will help to enhance written communication skills.

#### E. Learning skills

Graduates will have the ability to develop and increase their skills through the consultation of the published scientific literature and the use of databases and other information. The master degree in Economics and Finance also provides the methodological skills that support capabilities for further learning up to the possibility to continue their studies in doctoral programs.

The students have also the opportunity to attend other activities organized by the Department of Economics, Management and Quantitative Methods such as seminars and workshops to improve their ability to understand scientific challenges and new topics of research.

The preparation of the final dissertation provides students further opportunities to develop the skills of independent learning.

### **Professional profile and employment opportunities**

The master course in Economics and Finance aims at forming the following professional profiles.

Profile: Analyst and financial adviser.

Functions: the professionals included in this category make suggestions for investment and give technical advice to managers on which they depend functionally; assist the management of financial investments through the economic and financial analysis of market data; propose predictive models of economics, financial times series and provide guidance for the calibration of theoretical models using market data.

Skills: baggage of theoretical knowledge and operational tools aimed at evaluating financial investments, the evaluation of the financial and credit risk.

Career opportunities: They operate in the office of financial management of banks, investment firms, investment funds, banks, financial intermediaries, research and financial statement purposes. They also work as private consultants.

Profile: Operator of financial markets and financial intermediary.

Functions: the figures included in this category act directly or on behalf of their company in the financial markets or as brokerage agents, also assist the company in the interaction with the regulatory authorities in the markets thanks to a thorough knowledge of the rules that govern them.

Skills: baggage of theoretical knowledge and legal advice for the management of financial investments, executives and management of contracts; ability to operate on traditional and digital markets.

Career opportunities: They operate in the office of financial management of banks, investment firms, investment funds, banks, financial intermediaries, research and financial statement purposes.

Profile: Manager or Director of the departments of finance, financial institutions or international economic institutions.

Functions: the occupations included in this category exercise managerial functions of high responsibility in private and public companies with an international vocation, in finance, risk management and credit.

Skills: baggage of theoretical knowledge of economic-legal type for the management of economic institutions and private companies or in banking and financial institutions operating in international contexts.

Career opportunities: They operate private or public companies in industry and services to businesses, banks and similar institutions, and international and governmental institutions.

Profile: Professionals in the management of programs and projects of international development.

Functions: the occupations included in this category contribute to the formulation, management, monitoring, reporting of programs and projects of business development and market expansion within the international arena.

Skills: baggage of theoretical and operational knowledge about international economy, strategy of business management, legal and administrative regulation of the markets, processes of economic integration and economic policies that govern them.

Career opportunities: They operate private or public companies of industry, trade, business services, banks and similar institutions, and international and governmental institutions.

### **Pre-requisites for admission**

To attend the Master program in Economics and Finance it is necessary to have adequate knowledge of mathematics, economics and statistics at undergraduate level.

Students with an Italian degree (ex. DM 270 /04) of the following classes:

l-7 Ingegneria civile e ambientale

l-8 Ingegneria dell'informazione  
l-9 Ingegneria industriale  
l-16 Scienze dell'amministrazione e dell'organizzazione  
l-18 Scienze dell'economia e della gestione aziendale  
l-20 Scienze della comunicazione  
l-30 Scienze e tecnologie fisiche  
l-31 Scienze e tecnologie informatiche  
l-32 Scienze e tecnologie per l'ambiente e la natura  
l-33 Scienze economiche  
l-35 Scienze matematiche  
l-36 Scienze politiche e delle relazioni internazionali  
l-37 Scienze sociali per la cooperazione, lo sviluppo e la pace  
l-41 Statistica

and students with an italian degree (ex DM 509/99) in the classes equivalent to those listed above can apply.

Candidates can also enroll to the programme from undergraduate classes other than those listed above after positive evaluation of the Collegio Didattico or its delegates (ad hoc committee or the President of the Collegio Didattico) if they substantively satisfy the access requirements.

Applicants lacking one or more of the following minimum entry requirements will not be assessed by the Admission Committee:

- a) at least 6 ECTS in the area of mathematics (MAT/01 - MAT/09, SECS-S/06).
- b) at least 6 ECTS in the statistical area (SECS-S/01 - SECS-S/05, SECS-P05): a statistics course or a basic econometrics one.
- c) at least 12 ECTS in the economic area (SECS-P/01 - SECS-P/03, SECS-P/06): at least one course of Microeconomics and one of Macroeconomics.
- d) evidence of computer skills (ECDL) or 3 ECTS in Computer Science (INF/01, ING-INF/05) or equivalent diploma.

As for the English language knowledge, a level B2 or higher (according to CEFR) properly certified (eg.: TOEFL, IELTS, etc.) is required. In the absence of any certification the Admission Committee reserves the right to verify the candidates' knowledge of English during the interview to be conducted along the lines specified below.

Each applicant will have to submit, together with the application, a detailed curriculum vitae. Failing to provide the above mentioned documentation, the applicant will be excluded from the selection procedure.

Students with foreign qualification are expected to meet the substantive requirements equivalent to the minimum requirements for students with italian title. Such checking of pre-requisites will be conducted by an Admission Committee appointed by the Faculty Board - Collegio Didattico.

Applicants who meet the minimum entry requirements (irrespective of their nationality) are assessed by the Admission Committee according to the following criteria grid.

Criterion: Academic curriculum

Description: Length and quality of the undergraduate degree, as well as the final grade

Maximum score: 80

Criterion: Choice coherence

Description: Coherence between the previous academic curriculum/professional experience (if any) and the learning objectives of the Master's degree in Finance and Economics

Maximum score: 20

Applicants who obtain a score equal or less than 60 points are not admitted.

Applicants who obtain a score above 60 points but less than 80 points will be invited to an oral interview held in English language and exclusively done via electronic devices (eg.: via skype). The interview is aimed at examining in more depth the applicants' background knowledge and English fluency.

Applicants who obtain more than 80 points and satisfy the English knowledge requirements are admitted without any interview.

Applicants not submitting any proper English knowledge certification will undergo an oral interview with the Admission Committee even if they exceed the 80 points threshold.

### **Programme structure**

The master degree in Finance and Economics is a genuinely multidisciplinary programme, presenting a balanced offer of courses in economics and finance supported by several quantitative courses.

Students must earn 120 ECTS to complete programme requirements.

## **Campus**

Faculty of Political, Economic and Social Sciences - Via Conservatorio, 7 - 20122 MILANO

## **Compulsory attendance**

No obligation

## **Study plan definition and submission for approval**

Students may choose a complete study plan starting from the first year.

## **Degree programme final exam**

The final exam consists in the submission and public discussion, in front of a committee, of a master's dissertation.

The master's dissertation is an original piece of work, written by the candidate under the guidance of a supervisor.

For the preparation of the final Master thesis, the students will earn 21 ECTS which includes a mandatory stage equivalent to 3 ECTS (no additional credits earned). The Master thesis might (and strongly suggested to) be related to the stage project.

## **Criteria for admission to degree course final exam**

Having earned at least 99 credits for the learning activities contemplated by his/her study plan, a student may be admitted to undertake the final exam leading to the award of the master's degree.

A total of 21 credits are reserved to the design, preparation and writing up of the master's dissertation, including the mandatory stage of 3 credits.

The formal assignment of these credits can only take place at the moment when the stage is completed, the dissertation is discussed and the final exam is passed.

## **EXPERIENCE OF STUDY ABROAD AS PART OF THE DEGREE PROGRAM**

The University of Milan supports international mobility by providing its students with the opportunity to spend study and internship periods abroad. It is a unique chance to enrich your educational path in a new exciting environment.

The agreements entered into by the University with over 300 universities from 30 different countries under the European Erasmus+ programme allow regularly enrolled students to carry out part of their studies at one of the partner universities or to undertake internships at companies, training and research centres and other organizations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

## **Study and internships abroad**

One of the most effective policies adopted by European Union in the last years has been the internationalization of higher education. The various Erasmus programmes that have been implemented since the nineties have greatly increased the mobility of European students.

Being a brand-new programme with an internationally oriented educational core strategy, MEF promotes a wide internationalization of their students, and therefore strongly encourages them to spend part of their studies abroad in Erasmus+ Programmes.

Erasmus+ provides opportunities to study, train, gain work experience and skills. Students can go abroad from 3 up to 12 months (including a complementary traineeship period, if planned), and may receive additional grants for studying or training. At the end of their foreign stay, students get full recognition of completed activities in terms of credits for their degree. Student mobility is carried out in the framework of prior "inter-institutional agreements" between the sending and receiving institutions.

Students can also join the traineeship programme (Placement), by going abroad from 2 up to 12 months, starting their traineeship from the first year of study. For a traineeship which is an integral part of the curriculum, the sending institution must give full academic recognition for the period spent abroad. For a traineeship that is not part of the curriculum of the student, the sending institution shall provide recognition at least by recording this period in the Diploma Supplement or, in the case of recent graduates, by providing a traineeship certificate. Traineeship may also be established with private and public companies, educational or research centers other than the hosting institution, especially in the field of finance.

MEF academic staff has strong relations with some important European universities, in particular in Germany, France and Poland but also outside the EU, and is actively involved in research and education networks, so that students' activity abroad (including the development of the final dissertation) can be successfully supervised. Short exchange programs are in place with the HSBC Business School - Peking University Shenzhen (China), Plekhanov Russian University of Economics (Moscow, Russian Federation).

## **How to participate in Erasmus mobility programs**

The students of the University of Milan can participate in mobility programmes, which last 3 to 12 months, through a public selection procedure.

Ad hoc commissions will evaluate:

- the candidate's proposed study programme abroad
- his/her foreign language proficiency
- the reasons behind his/her application

Call for applications and informative meetings

The public selection generally begins around February each year with the publication of a call for applications specifying the destinations, with the respective programme duration, requirements and online application deadline.

Every year, before the deadline for the call, the University organizes informative meetings to illustrate opportunities and rules for participation to students.

#### Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which is supplemented by the University funding for disadvantaged students.

#### Language courses

Students who pass the selections for mobility programmes can benefit from intensive foreign language courses offered each year by the University.

Learn more at <https://www.unimi.it/en/international/study-abroad/studying-abroad-erasmus>.

For assistance, please contact:

International Mobility Office

Via Santa Sofia 9 (second floor)

Tel. 02 503 13501-12589-13495-13502

E-mail: [mobility.out@unimi.it](mailto:mobility.out@unimi.it)

Desk opening hours: Monday to Friday 9 am - 12 noon

### **ADMISSION CRITERIA: 1ST YEAR OPEN, SUBJECT TO ENTRY REQUIREMENTS**

#### **Links to enrolment information and procedures**

<https://www.unimi.it/en/study/enrolment>

#### **Practical instructions**

All applicants (both foreign and Italian holding a bachelor's degree or expecting to obtain it by December 31st, 2020), with the exception of non-EU students not resident in Italy, must apply for admission to the MEF programme from March 1st, 2020 till June 30th, 2020.

Non-EU applicants not resident in Italy (holding a bachelor's degree or expecting to obtain it by December 31st, 2020), must apply for admission to the MEF programme from March 1st, 2020 till May 31st, 2020.

Non-EU applicants not resident in Italy are also required to submit a pre-application at the Italian Embassy of their own country before June 30th 2020 (this date may be subject to change according to Italian Ministry of Foreign Affairs).

For more specific information about the selection criteria, please check the 'prerequisites for admission' section of this document.

For an idea of the appropriate level of knowledge, competences, and skills, candidates may consult the following textbooks:

#### Mathematics

Topics: Calculus, Linear Algebra.

Suggested reference:

- Sydsæter, K., Hammond, P. (2008) Essential Mathematics for Economic Analysis, (3 edition), Pearson. Chap: 1-10 (Calculus I), 15-16 (Vector and Matrices)

#### Economics

Topics: Principles of micro and micro economics.

Suggested references (both):

- Blanchard O. (2010) Macroeconomics, 5th edition, Pearson Prentice-Hall, Upper Saddle River, N.J., 2010.
- Varian H. (2009) Intermediate Microeconomics. A Modern Approach, 8th edition, Norton, New York, N.Y.

#### Statistics

Topics: elementary probability and random variables, descriptive statistics, statistical inference.

Suggested references (any of those):

- Ross S. (2010) Introductory Statistics, 3d Edition, Elsevier.
- Trosset M.W. (2008) An introduction to statistical inference and its applications with R, Chapman & Hall/CRC.
- Moore D., McCabe G.P., Craig B. (2012) An Introduction to the Practice of Statistics, 7th edition, W.H. Freeman & Company.

#### Econometrics

Topics: Linear regression model with one or more regressors: estimation and testing, Instrumental Variables.

Suggested reference:

- Stock J., Watson M. (2010) Introduction to Econometrics, 3rd Edition, Addison-Wesley.

Further detailed information concerning the MEF programme and the admission procedures are available at <https://mef.cdl.unimi.it/en> or the programme secretary, [mef@unimi.it](mailto:mef@unimi.it), tel. +39 02 503-21553.

#### N° of places reserved to non-EU students resident abroad

50

### ADMISSION CRITERIA: 2°YEAR

#### Notes

Also candidates who wish to enroll in the second year of MEF need to submit their application and satisfy the entry requirements described above.

<b>1st COURSE YEAR Core/compulsory courses/activities common to all curricula</b>		
Learning activity	Ects	Sector
Advanced Microeconomics and Macroeconomics	12	SECS-P/01
Data Mining and Computational Statistics	9	SECS-S/01
Financial Investments and Corporate Finance	12	(6) SECS-P/09, (6) SECS-P/11
International Economic Law	6	IUS/13
Mathematical Methods for Finance	9	SECS-S/06
Statistical Methods for Finance	6	SECS-S/01
Time Series Analysis	6	SECS-P/05
Total number of compulsory credits/ects		60
<b>2nd COURSE YEAR Core/compulsory courses/activities common to all curricula</b>		
Learning activity	Ects	Sector
Decision Theory and Behavioural Economics	6	SECS-P/02
Financial Markets and Financial Crises: A Historical Approach	6	SECS-P/12
Total number of compulsory credits/ects		12
<b>Further elective courses common to all curricula</b>		
Students must earn 9 credits for elective activities.		
Students must earn 3 credits by selecting an Internship/Stage.		
<b>End of course requirements common to all curricula</b>		
Final Exam	18	NA
Total number of compulsory credits/ects		18

### LIST OF CURRENTLY AVAILABLE CURRICULA

FINANCIAL ECONOMICS Course years currently available: 2nd  
 QUANTITATIVE FINANCE Course years currently available: 1st, 2nd

#### CURRICULUM: [B73-A] FINANCIAL ECONOMICS

#### Contents

The curriculum Financial Economics is not available for students enrolled in 2020-2021 academic year.

<b>2nd COURSE YEAR Core/compulsory courses/activities Curriculum-specific features FINANCIAL ECONOMICS</b>		
Learning activity	Ects	Sector
Asset Pricing and Financial Contracts	12	SECS-P/01
Money and Finance	6	SECS-P/01
Total number of compulsory credits/ects		18

#### CURRICULUM: [B73-B] QUANTITATIVE FINANCE

<b>2nd COURSE YEAR Core/compulsory courses/activities Curriculum-specific features QUANTITATIVE FINANCE</b>		
Learning activity	Ects	Sector
Numerical Methods for Finance and Risk Management	12	(6) SECS-S/01, (6) SECS-S/06
Portfolio Optimization	6	SECS-S/06
Total number of compulsory credits/ects		18

***COURSE PROGRESSION REQUIREMENTS***

None