



UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2023/24
IN
FINANCE AND ECONOMICS (MEF) - Classe LM-16
Enrolled from 2021/2022 academic year

HEADING

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

PERSONS/ROLES

Head of Study Programme

Prof. Paolo Garella

Tutors - Faculty

Prof. Alessandro Barbiero (Internships / Labs / Erasmus+)

Prof. Lorenzo Mercuri (Students' inbound orientation)

Prof. Paolo Garella (Plans of study)

Disability Referee: Prof. Paolo Garella

Degree Course website

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

Degree Course E-mail

Email: mef@unimi.it

Facebook

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

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

Graduates of this master course will receive advanced training in quantitative methodologies and tools suitable to interpret and analyze economic and financial phenomena and will be able to operate directly on financial markets or in international economic institutions. The study program is designed to provide students with a solid background through the development of topics of economic theory, analysis of financial markets and the theory of decision making. 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 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 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 sector intended in a broad sense.

The second one, named Quantitative Economics, is dedicated to the training of professional economists capable of operating at national/international, public/private institutions (including the academia) or at the level of central government in both the financial and economic spheres.

Expected learning outcomes

In the spirit of harmonization of education within the European Union, the graduates of the 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 and financial economics, advanced microeconomics and macroeconomics, growth and labour-market theories, the theory of investment-decisions (also under uncertainty) in economics and finance. The theories and analytical tools learnt from economics will enable students to understand the processes of economic globalization and growth, as well as 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. Students are expected to learn how to perform quantitative analyses for business and economic decision making, management of investments and financial forecasting of macroeconomic scenarios.

For the business and financial areas, 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 policies of enterprise management, the strategies of internationalization of firms, the principles of corporate finance, the functioning of the financial system, the investment decisions and the policies for 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, the 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 and financial globalization, to the design and implementation of internationalization strategies of firms, to the assessment of the financial risk, to the identification of the best economic policies to be implemented 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: the effects and effectiveness of the decisions of firms and financial institutions in which they were to operate, even in relation to the ethical implications of these 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. Learning these principles will turn to be extremely useful in trying to solve those problems that they will face during their professional activity. The multidisciplinary approach of this programme 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, reports, analyses, etc.); build cooperative relationships and collaborative working activities within groups; suggest solutions to the problems faced within the working contexts 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 through 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-sets. The master degree in Finance and Economics also provides the methodological skills that support capabilities for further learning up to the possibility to continue their studies in doctoral programs.

The students also have 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 with further opportunities to develop the skills of independent learning.

Professional profile and employment opportunities

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

Profile: Consultant and financial adviser.

Functions: the professionals included in this category make suggestions for investment and give technical advice to managers on whom they depend functionally; assist the management of financial investments through the economic and financial analysis of market data; propose predictive models of economics, financial time 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, as well as financial and credit risks.

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

Profile: Operator and analyst of financial markets.

Functions: the figures included in this category act directly 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, the execution 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, commercial and investment banks, financial intermediaries, for research and financial statement purposes.

Profile: Academic researcher, or researcher in research-departments within economic and financial institutions, both national and international.

Functions: the occupations included in this category exercise active research-functions of high responsibility in the fields of finance and economics within institutions and firms (both private and public, national and international).

Skills: baggage of theoretical knowledge in the economic-legal-financial fields aimed at doing active research (both theoretical and applied) in economic institutions and private companies, or else in banking and financial institutions operating in national and international contexts.

Career opportunities: They operate in universities, research-centers, research-departments of public/private firms, research departments of banks and similar institutions, or research-departments of international and governmental institutions.

Profile: Operators in the management and implementation 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 economic development as well as business development (i.e., business market expansion within the international arena).

Skills: baggage of theoretical and operational knowledge in the fields of managerial development and economic development/growth; strategic management of international and multinational firms; legal and administrative regulation of markets; analysis of the processes of economic globalization, and the economic policies that govern such processes.

Career opportunities: They operate in companies (private or public companies of industry, trade, business services, banks and similar institutions) strongly oriented to internationalization and market-expansion (multinational firms), and in international and governmental institutions oriented to economic development.

Pre-requisites for admission

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

Students with an Italian degree (ex D.M. 270/2004) 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 D.M. 509/1999) 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 (an Admission Committee or the President of the Collegio Didattico) if

they substantively satisfy the access requirements.

Candidates lacking of 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-P/05): 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 at least one course of Macroeconomics.
- d) evidence of computer skills (ECDL) or 3 ECTS in Computer Science (INF/01, ING-INF/05) or equivalent diploma.
- e) proficiency in English at a C1 level or higher according to the Common European Framework of Reference for Languages (CEFR).

The C1-level requirement will be ascertained by the University Language Centre (SLAM) upon admission as follows:

- Language certificate of C1 or higher level issued no more than three years before the date of admission application. You will find the list of language certificates recognized by the University at: <https://www.unimi.it/en/node/297/>). The certificate must be uploaded when submitting the online application;
- English level achieved during a University of Milan degree programme and certified by the University Language Centre (SLAM) no more than four years before the date of admission application. In this case the process is automatic, the applicant does not have to attach any certificates to the application;
- Placement test administrated by the University Language Centre (SLAM) according to the calendar published on the website: <https://www.unimi.it/en/node/39267/>

All those who fail to submit a valid certificate or do not meet the required proficiency level will be instructed during the admission procedure to take the placement test.

Applicants who do not take or pass the placement test will be required to obtain a language proficiency certificate recognized by the University (see: <https://www.unimi.it/en/node/297/>) and deliver it to the SLAM via the InformaStudenti service by the deadline fixed for the master's programme (<https://www.unimi.it/en/node/39267/>).

Applicants who do not meet the requirement by said deadline will not be admitted to the master's degree programme and may not sit any further tests.

Each applicant will have to submit, together with the application, a detailed curriculum vitae. Failing to provide this document implies that the applicant will be excluded from the selection.

Students with foreign qualification are expected to meet the substantive requirements equivalent to the minimum requirements for students with Italian title. Such checking of the 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 (i.e., number of years taken) and quality (i.e., average grade in the overall number of exams taken) of the undergraduate degree as well as the final graduation mark

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 70 points are not admitted.

Applicants who obtain a score above 70 points but less than 80 points might be invited to an oral interview, held in English language and exclusively done via electronic devices (e.g.: via skype). The interview is aimed at examining in more depth the applicants background knowledge.

Applicants who obtain a score greater or equal to 80 points and satisfy the English knowledge requirements may still be subject to further interview before admission.

Among the electives, those who do not hold an Italian high school diploma or university degree can obtain 3 credits in Additional language skills: Italian by demonstrating A2 level in Italian per the Common European Framework of Reference for Languages (CEFR). This level can be assessed in the following ways:

- by submitting a certificate of A2 or higher level issued no more than three years prior to the date of submission. You will find the list of language certificates recognized by the University at: <https://www.unimi.it/en/node/349/>). The language certificate must be submitted to the University Language Centre (SLAM) via the Language Test category of the InformaStudenti service: [https://informastudenti.unimi.it/saw/ess?AUTH=SAML](https://informastudenti.unimi.it/saw/ess?AUTH=SAML;);

- by an entry-level test administrated by SLAM that can only be taken only once.
Those who fail to reach A2 level will have to attend a 60-hour Italian course geared to their level.
Those who do not take the entry-level test or fail to pass the end-of-course test after six attempts will have to obtain language certification privately in order to earn the 3 credits of Additional language skills: Italian. As an alternative, they can modify their course programme by choosing a different elective.

The requirements must be met by the date of effective submission of the application for admission.

Programme structure

Teaching modalities and organization

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.

Courses organization

Some MEF courses are organized in multiple modules. Please check the website page of each course for further information:
<https://mef.cdl.unimi.it/en/courses>

Study plan submission

Submission procedures and terms

Students may choose a complete study plan starting from the first year. Plans of study may be amended during the second year. Each student must submit at least one plan of study before applying for graduation.

To graduate, students must have passed all exams included in their latest approved plan of study. If, at the time of applying for graduation, the exams listed in the plan of study do not match those actually passed, the student cannot graduate.

Submission deadlines of plans of study are regulated by the Students' Secretariats for each academic year, according to the instructions provided on the Unimi related webpage.

Furthermore, there are other elective activities introduced by the University project aimed to develop students' transversal skills. Students need to register these activities in their study plan; transversal skills activities have a limited number of seats and students can apply for one of these seats only if the Course of Study has integrated these activities into the program. For further details, please visit the following webpage: <https://www.unimi.it/en/study/bachelor-and-master-study/following-your-programme-study/soft-skills>

Didactic calendar

Please check: <https://www.unimi.it/en/education/faculties-and-schools/political-economic-and-social-sciences/studying-political-economic-and-social-sciences>

Lectures timetable

Please check the courses timetable here: <https://mef.cdl.unimi.it/en/study/course-timetable>

Exams

Please check the exam sessions calendar: <https://mef.cdl.unimi.it/en/study/exams>

Tutoring

Each year students are selected as tutors to monitor and support other students with learning difficulties. The degree course also makes use of the tutors available from the Department of Economics, Management and Quantitative Methods to support foreign students and working students on logistical/organizational problems.

Compulsory attendance

No obligation

Internship criteria

It is compulsory for students to take part in an internship lasting at least 100 hours in order to gain 3 ECTS. More information available here: <https://mef.cdl.unimi.it/en/study/stage-and-internship>

Degree programme 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. The final exam consists in the submission and public defense, 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 and a co-supervisor. A total of 21 credits are reserved to the design, preparation and writing up of the master's dissertation, including the mandatory internship of 3 credits. The formal assignment of these credits can only take place at the moment when the internship is completed, the dissertation is defended, and the final exam is passed.

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 the 27 EU member 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 the European Union in the last few years has been the internationalization of higher education. The various Erasmus programs that have been implemented since the nineties have greatly increased the mobility of European students.

Being a programme with an internationally-oriented educational core strategy, MEF promotes a wide internationalization of its 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, Poland and Belgium, 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. Moreover, as already said, students attending the Curriculum in Quantitative Economics can apply to the double-degree program with the “Master en sciences économiques, orientation générale, à finalité approfondie – ECON2MA - (120 ECTS)”, a master-program jointly organized by the Belgian Universities of UCL (Université catholique de Louvain) and Namur.

How to participate in Erasmus mobility programs

The students of the University of Milan can participate in mobility programmes, through a public selection procedure.

Ad hoc commissions will evaluate:

- academic career
- 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 for Erasmus+ mobility for study generally begins around February each year with the publication of a call for applications specifying destinations and requirements. Regarding the Erasmus+ Mobility for Traineeship, the University of Milan usually publishes two calls a year enabling students to choose a destination defined by an inter-institutional agreement or to find a traineeship position on their own.

The University organizes informative meetings to illustrate mobility opportunities and rules for participation.

Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which may be 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 Language Centre (SLAM).

<https://www.unimi.it/en/node/8/>

Learn more at <https://www.unimi.it/en/node/274/>

For assistance, please contact:

International Mobility Office

Via Santa Sofia 9 (second floor)

Tel. 02 503 13501-12589-13495-13502

Contacts: InformaStudenti

Student Desk booking through InformaStudenti

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

Application and enrolment information and procedures

Applicants from EU countries must apply for admission to the MEF programme from March, 6th 2023 until June, 30th 2023; applicants from non-EU countries must apply for admission to the MEF programme from March, 6th 2023 until May, 31st 2023.

Further information about admission procedures are available on: <https://mef.cdl.unimi.it/en/enrolment>

For 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 (both):

- Sydsæter, K., Hammond, P. (2008) Essential Mathematics for Economic Analysis, (3 edition), Pearson. Chap: 1-10 (Calculus I), 15-16 (Vector and Matrices)
- Simon, C.P., Blume, L. (2010) Mathematics for Economists, W. W. Norton & Company

Economics

Topics: Principles of microeconomics and macroeconomics.

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 the following):

- Ross S. (2010) Introductory Statistics, 3rd 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/enrolment>, or can be asked to the programme secretariat, mef@unimi.it.

Links to enrolment information and procedures

<https://www.unimi.it/it/node/183/>

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

30

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 according to the rules described above.

1st COURSE YEAR Core/compulsory courses/activities common to all curricula		
Learning activity	Ects	Sector
Advanced Microeconomics and Macroeconomics	12	SECS-P/01
Data Mining and Computational Statistics	9	SECS-S/01
Financial Investments: Module I, Portfolio Theory; Module II, Portfolio Management	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
2nd COURSE YEAR Core/compulsory courses/activities common to all curricula		
Learning activity	Ects	Sector
Financial Economics	6	(3) SECS-P/02, (3)

		SECS-P/01
Financial Markets and Financial Crises: A Historical Approach	6	SECS-P/12
Total number of compulsory credits/ects	12	
Further elective courses common to all curricula		
Students must earn 9 credits for elective activities.		
Foreign students with insufficient knowledge of the Italian language can obtain 3 ECTS for “Additional Language Skills: Italian” (please check: https://mef.cdl.unimi.it/en/courses/italian-language-foreigners-tests-and-courses)		
Additional Language Skills: Italian (3 ECTS)	3	ND
Students must earn 3 credits by selecting an Internship/Stage (please check: https://mef.cdl.unimi.it/en/study/stage-and-internship)		
End of course requirements common to all curricula		
Final Exam	18	NA
Total number of compulsory credits/ects	18	

LIST OF CURRENTLY AVAILABLE CURRICULA

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

CURRICULUM: [B73-B] QUANTITATIVE FINANCE

Core learning objectives for the course

The objective of this curriculum is to strengthen students' knowledge in the fields of quantitative finance, numerical methods for finance, portfolio optimization and risk-management.

2nd COURSE YEAR Core/compulsory courses/activities Curriculum-specific features QUANTITATIVE FINANCE

Learning activity	Ects	Sector
Numerical Methods for Finance and Portfolio Optimization	12	(6) SECS-S/01, (6) SECS-S/06
Risk Management	6	SECS-S/06
Total number of compulsory credits/ects	18	

CURRICULUM: [B73-C] QUANTITATIVE ECONOMICS

Core learning objectives for the course

The objective of this curriculum is to strengthen students' knowledge in the fields of quantitative economics, dynamic macroeconomics and micro-econometrics.

2nd COURSE YEAR Core/compulsory courses/activities Curriculum-specific features QUANTITATIVE ECONOMICS

Learning activity	Ects	Sector
Dynamic Macroeconomics (Module I: Growth Theory + Module II: Investment and Labour Markets Theory)	12	SECS-P/01
Microeconometrics	6	(3) SECS-P/05, (3) SECS-P/01
Total number of compulsory credits/ects	18	

COURSE PROGRESSION REQUIREMENTS

None