



**UNIVERSITA' DEGLI STUDI DI MILANO**  
**PROGRAMME DESCRIPTION - ACADEMIC YEAR 2019/20**  
**MASTER DEGREE**  
**DATA SCIENCE AND ECONOMICS - (Classe LM-91)**  
**Enrolled from 2018/2019 academic year**

### **HEADING**

<b>Degree classification - Denomination and code:</b>	LM-91 Techniques and methods for the Information Society
<b>Degree title:</b>	Dottore Magistrale
<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>Years of course currently available:</b>	1st , 2nd
<b>Access procedures:</b>	Open, subject to completion of self-assessment test prior to enrolment
<b>Course code:</b>	B74

### **PERSONS/ROLES**

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

Prof.ssa Silvia Salini

#### **Tutors - Faculty**

Prof. Stefano Maria Iacus  
Prof. Fabrizio Iacone  
Prof. Alfio Ferrara  
Prof. Nicolò Cesa-Bianchi

#### **Degree Course website**

<http://www.dse.unimi.it>

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

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

#### **Enrolment and Admission**

<http://www.unimi.it/studenti/matricole/77648.htm>

#### **Facebook**

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

#### **Further Degree Course Website**

<http://www.datasciencelab.unimi.it>

#### **Stage Contact Person**

Prof. Giancarlo Manzi e Prof.ssa Sabrina Gaito

#### **Twitter**

<https://twitter.com/DseUnimi>

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

The University of Milan supports the international mobility of its students, offering them the opportunity to spend periods of

study and training abroad, a unique opportunity to enrich their curriculum in an international context.

### **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, DSE 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.

DSE academic staff has strong relations with some important European universities, in particular in Germany, Belgium, France, Spain and the Netherlands, 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.

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

To gain access to mobility programs for study purposes, lasting 3-12 months, the enrolled students of the University of Milan must attend a public selection that starts usually around the month of February each year through the presentation of specific competition announcements, which contain information on available destinations, respective duration of the mobility, requirements and deadlines for submitting the online application.

The selection, aimed at evaluating the proposed study abroad program of the candidate, knowledge of a foreign language, especially when this is a preferential requirement, and the motivations behind the request, is performed by specially constituted commissions.

Each year, before the expiry of the competition announcements, the University organises information sessions for the specific study course or groups of study courses, in order to illustrate to students the opportunities and participation rules.

To finance stays abroad under the Erasmus + program, the European Union assigns to the selected students a scholarship that - while not covering the full cost of living abroad - is a useful contribution for additional costs as travel costs or greater cost of living in the country of destination.

The monthly amount of the communitarian scholarship is established annually at national level; additional contributions may be provided to students with disabilities.

In order to enable students in economic disadvantaged conditions to participate in Erasmus+ program, the University of Milan assigns further additional contributions; amount of this contributions and criteria for assigning them are established from year to year.

The University of Milan promotes the linguistic preparation of students selected for mobility programs, organising every year intensive courses in the following languages: English, French, German and Spanish.

The University in order to facilitate the organisation of the stay abroad and to guide students in choosing their destination offers a specific support service.

More information in Italian are available on [www.unimi.it](http://www.unimi.it) > Studenti > Studiare all'estero > Erasmus+

For assistance please contact:

Ufficio Accordi e relazioni internazionali

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Fax 02 503 13503

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

Desk opening hour: Monday-friday 9-12

<b>1st COURSE YEAR Core/compulsory courses/activities common</b>				
Distribution	Learning activity	Teaching units/modules	Ects	Sector
	Advanced Microeconomics and Macroeconomics (tot. credits: 12)	Module Advanced Microeconomics	6	SECS-P/01
		Module Advanced Macroeconomics	6	SECS-P/01
	Coding for Data Science and Data Management (tot. credits: 12)	Module Coding for Data Science	6	INF/01
		Module Data Management	6	SECS-S/01
	Graph Theory, Discrete Mathematics and Optimization (tot. credits: 12)	Module Graph Theory and Discrete Mathematics	6	SECS-S/06
		Module Optimization	6	MAT/09
	Machine Learning, Statistical Learning, Deep Learning and Artificial Intelligence (tot. credits: 12)	Module Machine Learning	6	INF/01
		Module Statistical Learning, Deep Learning and Artificial Intelligence	6	SECS-S/01
	Micro-econometrics, Causal Inference and Time Series Econometrics (tot. credits: 12)	Module Micro-econometrics and Causal Inference	6	SECS-S/01
		Module Time Series Econometrics	6	SECS-P/05
Total compulsory credits			60	

<b>2nd COURSE YEAR Core/compulsory courses/activities common</b>				
Distribution	Learning activity	Teaching units/modules	Ects	Sector
	Algorithms for Massive Data, Cloud and Distributed Computing (tot. credits: 12)	Module Algorithms for Massive Data	6	INF/01
		Module Cloud and Distributed Computing	6	INF/01
	Cybersecurity and Privacy Preservation Techniques and Digital Security and Privacy (tot. credits: 6)		3	IUS/01, IUS/09, IUS/14
			3	IUS/01, IUS/09, IUS/14
Total compulsory credits			18	

### **Activites chosen by the student**

**ECONOMICS (Suggested Path)**  
**(3 activities among the following, but not more than 2 among those marked by \*)**  
**(course not activated in 2019/2020 marked by §)**  
**Total 18 credits/ects**

	Advanced Multivariate Statistics		6	SECS-S/01
	Bayesian Analysis §		6	SECS-S/01
	Experimental Methods and Behavioural Economics §		6	SECS-P/02
	Fintech Industry *		6	SECS-P/11
	Game Theory		6	SECS-P/01
	Global Firms and Markets		6	SECS-P/08
	Knowledge Extraction and Information Retrieval		6	INF/01
	Labour Economics and Policy Evaluation §		6	SECS-P/03
	Numerical Methods for Finance		6	SECS-S/01
	Patients' Needs and Healthcare Markets		6	SECS-P/01
	Portfolio Optimization *		6	SECS-S/06
	Probabilistic Modeling		6	SECS-S/01
	Quantum Finance * §		6	SECS-S/06
	Risk Management *		6	SECS-S/06
	Sampling Techniques for Big Data §		6	SECS-S/01
	Scientific Data Visualization §		6	INF/01

**BUSINESS INNOVATION (Suggested Path)**  
**(3 activities among the following)**  
**Total 18 credits/ects**

	Advanced Multivariate Statistics		6	SECS-S/01
	Digital Business Strategies		6	SECS-P/07
	Fintech Industry *		6	SECS-P/11
	Human Resource Management Via Workforce Analytics §		6	SECS-P/10
	Intellectual Property for Business: Strategy and Analysis		6	SECS-P/10
	Knowledge Extraction and Information Retrieval		6	INF/01
	Marketing Analytics		6	SECS-P/08
	Open Data for New Business §		6	SECS-P/08
	Probabilistic Modeling		6	SECS-S/01
	Project Managements and Innovation in the Era of Big Data		6	SECS-P/08

	Sampling Techniques for Big Data §		6	SECS-S/01
	Scientific Data Visualization §		6	INF/01
	Social Network Analysis for Business and Organization §		6	SECS-P/08
	Text Mining and Sentiment Analysis		6	SECS-S/01, INF/01
<b>SOCIAL SCIENCE (Suggested Path)</b>				
<b>(3 activities among the following)</b>				
<b>Total 18 credits/ects</b>				
	Advanced Multivariate Statistics		6	SECS-S/01
	Communication Research §		6	SPS/07
	Digital Society		6	SPS/07
	Game Theory		6	SECS-P/01
	Labour Economics and Policy Evaluation §		6	SECS-P/03
	Patients' Needs and Healthcare Markets		6	SECS-P/01
	Probabilistic Modeling		6	SECS-S/01
	Public Opinion Research		6	SPS/11
	Sampling Techniques for Big Data §		6	SECS-S/01
	Scientific Data Visualization §		6	INF/01
	Social Network Analysis (tot. credits: 6)		3	INF/01
			3	INF/01
	Social Network Analysis for Business and Organization §		6	SECS-P/08
	Text Mining and Sentiment Analysis		6	SECS-S/01, INF/01
<b>Other learning activities chosen by the student</b>				
<b>Students must earn 12 credits for elective activities.</b>				
<b>Final learning activities</b>				
	Internship/Stage		3	
	Final Exam		9	
			Total compulsory credits	12

## COURSE PROGRESSION REQUIREMENTS

None