UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2022/23
MASTER DEGREE
DATA SCIENCE FOR ECONOMICS (Classe LM-data)
Enrolled from 2022/23 academic year

<table>
<thead>
<tr>
<th>HEADING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree classification - Denomination and code:</td>
</tr>
<tr>
<td>Degree title:</td>
</tr>
<tr>
<td>Length of course:</td>
</tr>
<tr>
<td>Credits required for admission:</td>
</tr>
<tr>
<td>Total number of credits required to complete programme:</td>
</tr>
<tr>
<td>Years of course currently available:</td>
</tr>
<tr>
<td>Access procedures:</td>
</tr>
<tr>
<td>Course code:</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PERSONS/ROLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of Study Programme</td>
</tr>
<tr>
<td>prof.ssa Silvia Salini Vice-Presidente Collegio Didattico Prof. Stefano Montanelli</td>
</tr>
<tr>
<td>Tutors - Faculty</td>
</tr>
<tr>
<td>Prof. Alfio Ferrara (Academic guidance tutor)</td>
</tr>
<tr>
<td>Prof. Luca Rossini (Academic guidance tutor)</td>
</tr>
<tr>
<td>Prof. Domenico Massaro (Erasmus and international mobility tutor)</td>
</tr>
<tr>
<td>Prof. Giancarlo Manzi (Internship tutor)</td>
</tr>
<tr>
<td><a href="https://www.linkedin.com/company/74033091/admin/">https://www.linkedin.com/company/74033091/admin/</a></td>
</tr>
<tr>
<td>Facebook</td>
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<td><a href="http://www.facebook.com/dseunimi">http://www.facebook.com/dseunimi</a></td>
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<td>Instagram</td>
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<td><a href="https://www.instagram.com/dse_unimi/">https://www.instagram.com/dse_unimi/</a></td>
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<td>Twitter</td>
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<td><a href="https://twitter.com/DseUnimi">https://twitter.com/DseUnimi</a></td>
</tr>
<tr>
<td>Web Site</td>
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<tr>
<td><a href="https://mls.cdl.unimi.it/en">https://mls.cdl.unimi.it/en</a></td>
</tr>
<tr>
<td>Welcome desk</td>
</tr>
<tr>
<td>Via Santa Sofia 9 Phone +39 02 5032 5032 <a href="https://www.unimi.it/en/study/student-services/welcome-desk-informastudenti">https://www.unimi.it/en/study/student-services/welcome-desk-informastudenti</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Milan supports international mobility by providing its students the opportunity to spend study and internship periods abroad. It is a unique chance to enrich the educational path in a new exciting environment. The agreements defined 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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study and internships abroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>
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 at least provide recognition 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.

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; mobility.out@unimi.it
Student Desk booking through InformaStudenti

<table>
<thead>
<tr>
<th>1st COURSE YEAR Core/compulsory courses/activities common</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning activity</strong></td>
</tr>
<tr>
<td>Coding for Data Science and Data Management</td>
</tr>
<tr>
<td>Data-Driven Economic Analysis</td>
</tr>
<tr>
<td>Dynamic Economic Modeling</td>
</tr>
<tr>
<td>Machine learning and Statistical Learning</td>
</tr>
<tr>
<td>Statistical Theory and Mathematics</td>
</tr>
<tr>
<td><strong>Total compulsory credits</strong></td>
</tr>
</tbody>
</table>

<p>| 2nd COURSE YEAR (available as of academic year 2023/24) Core/compulsory courses/activities common |</p>
<table>
<thead>
<tr>
<th>Learning activity</th>
<th>Ects</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cybersecurity and Protection of Personal Data: Legal and Policies</td>
<td>6</td>
<td>IUS/03,</td>
</tr>
<tr>
<td>(6) IUS/20</td>
<td></td>
<td>(6)</td>
</tr>
<tr>
<td>Privacy, data protection, and massive data analysis in emerging</td>
<td>12</td>
<td>INF/01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total compulsory credits</strong></td>
<td><strong>18</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Elective courses

**3 activities among the selected path**

**Total 18 credits/ects**

#### DATA SCIENCE PATH

(3 courses chosen from the following, no more than 1 among those indicated with the symbol *)

<table>
<thead>
<tr>
<th>Course</th>
<th>Ects</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Multivariate Statistics</td>
<td>6</td>
<td>SECS-S/01</td>
</tr>
<tr>
<td>Bayesian analysis</td>
<td>6</td>
<td>SECS-S/01</td>
</tr>
<tr>
<td>Functional and Topological Data Analysis</td>
<td>6</td>
<td>MAT/06</td>
</tr>
<tr>
<td>Marketing Analytics*</td>
<td>6</td>
<td>SECS-P08</td>
</tr>
<tr>
<td>Network Science</td>
<td>6</td>
<td>INF/01</td>
</tr>
<tr>
<td>Project Management and Innovation*</td>
<td>6</td>
<td>SECS-P10</td>
</tr>
<tr>
<td>Reinforcement learning</td>
<td>6</td>
<td>INF/01</td>
</tr>
<tr>
<td>Text Mining and Sentiment Analysis</td>
<td>6</td>
<td>INF/01</td>
</tr>
<tr>
<td>Time Series and Forecasting**</td>
<td>6</td>
<td>SECS-P05</td>
</tr>
</tbody>
</table>

#### ECONOMIC DATA ANALYSIS PATH

(3 courses chosen from the following, at least 2 of those indicated with the symbol **)

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<tr>
<th>Course</th>
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<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
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<td>6</td>
<td>SECS-S/01</td>
</tr>
<tr>
<td>Bayesian analysis</td>
<td>6</td>
<td>SECS-S/01</td>
</tr>
<tr>
<td>Causal Inference and Policy Evaluation**</td>
<td>6</td>
<td>SECS-P01</td>
</tr>
<tr>
<td>Experimental Methods and Behavioural Economics**</td>
<td>6</td>
<td>SECS-P01</td>
</tr>
<tr>
<td>Text Mining and Sentiment Analysis</td>
<td>6</td>
<td>INF/01</td>
</tr>
<tr>
<td>Time Series and Forecasting**</td>
<td>6</td>
<td>SECS-P05</td>
</tr>
</tbody>
</table>

#### Further elective courses

Students must earn 9 credits for elective activities.

Students must earn 3 credits by selecting one of the following alternatives: Foreign language: advanced; Transversal Skills, Laboratory

<table>
<thead>
<tr>
<th>Course</th>
<th>Ects</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Language Skills: Italian (3 ECTS)</td>
<td>3</td>
<td>ND</td>
</tr>
<tr>
<td>Transversal Skills</td>
<td>3</td>
<td>NA</td>
</tr>
</tbody>
</table>

Students must earn 3 credits by selecting one of the following alternatives: Internship or Stage

<table>
<thead>
<tr>
<th>Course</th>
<th>Ects</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internship or stage in companies, public or private bodies, professional orders</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td>Training and orientation internships</td>
<td>3</td>
<td>NA</td>
</tr>
</tbody>
</table>

#### End of course requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Ects</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>12</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Total compulsory credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Ects</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>12</td>
<td>NA</td>
</tr>
</tbody>
</table>

### COURSE PROGRESSION REQUIREMENTS

none