Politecnico di Torino

ACADEMIC REGULATIONS

Master's degree programme
in
DATA SCIENCE AND ENGINEERING

Department of Control and Computer Engineering

Collegio di Ingegneria Informatica, del Cinema e Meccatronica

Academic Year **2025/2026**

The English translation of this document is provided as a support to the student community and has no legal effects. The Italian version shall constitute the sole authentic text and will be referred to for any legal matters.

SUMMARY

Art. 1 – Specific learning objectives and career prospects

1.1 Specific learning objectives

Many disciplines, both in the field of sciences and human studies, are now strongly shaped by the massive use of digital data, primarily used in analyses that support decision-making processes.
The Master's degree programme in Data Science and Engineering aims to train interdisciplinary professionals (data scientists or data engineers) who can collect, refine, analyse, interpret and improve large and complex datasets, making them effectively available for subsequent decision-making processes.

1.2 Career prospects

The Master's degree programme aims to train a variety of professional profiles. The career prospects and the main functions and competencies associated to each profile are illustrated below.

Professional profile	Main functions and competencies
Data scientist	Functions: Engineers working as data scientists perform the following functions: • analyse the requirements of data analysis processes, including highly complex data. • design data analysis processes (using machine learning algorithms and mathematical models). • analyse data and extracts knowledge and value from it, using mathematical-statistical models and machine learning algorithms. • effectively display and communicate the results. Competencies: Data scientists can perform requirements analysis, design data analysis processes, analyse and extract value from data, and communicate effectively, thanks to the following competencies: • In-depth knowledge of mathematical models, statistical methods and machine learning algorithms for data analysis. • Strong methodological and engineering skills. • Advanced analytical and abstraction abilities for solving data-driven problems. • Effective information visualization and communication of extracted knowledge. • Ability to apply knowledge for decision-making purposes. • Awareness of the ethical implications of the analyses they perform. • Ability to work in multidisciplinary environments. Potential Employers: IT departments in medium-to-large companies. IT and non-IT consulting firms. Public and private research and development centres.
Data engineer	Functions: Graduates working as data engineers perform the following functions: • design systems and processes for extracting, storing and analysing large volumes of heterogeneous data. • develop data analysis processes for the implementation of data analysis workflows. • design and apply machine learning algorithms for data analysis. Competencies: Data engineers can design and develop systems and processes for managing and analysing data, thanks to the following competencies: • Knowledge of distributed systems used to collect, store and analyse large volumes of heterogeneous data. • Strong methodological and engineering skills. • Advanced analytical and abstraction abilities for solving data-driven problems.

	• Knowledge of programming paradigms and languages used to develop distributed applications in the Big Data field. • Knowledge of mathematical models, statistical methods and machine learning algorithms used for data analysis. • Strong engineering skills. Potential Employers: IT departments in medium-to-large companies. IT and non-IT consulting firms. Public and private research and development centers.

1.3 Professional profiles (ISTAT codes)

With reference to the list of professional profiles classified by ISTAT (Italian National Institute of Statistics, https://www.istat.it/en/), graduates from this Master's degree programme can work as:

ISTAT code	Description
2.1.1.4.1	Analisti e progettisti di software
2.6.2.1.1	Ricercatori e tecnici laureati nelle scienze matematiche e dell'informazione
2.6.2.3.2	Ricercatori e tecnici laureati nelle scienze ingegneristiche industriali e dell'informazione

Art. 2 – Admission requirements

Italian regulations on enrolment in Master's degree programmes require Italian universities to check that applicants meet the following requirements:

- have a **three-year Bachelor's degree or university diploma**, or **other educational qualification obtained outside Italy** and recognized as suitable for admission;
- meet specific curricular requirements;
- have an **academic performance considered suitable** for admission;

CURRICULAR REQUIREMENTS

As far as curricular requirements are concerned, applicants must have a Bachelor's degree, or a three-year university diploma, or an educational qualification obtained outside Italy and recognized as suitable for admission. Applicants must also have acquired knowledge and competencies (credits) in specific Scientific Disciplinary Fields (settori scientifico-disciplinari) or in groups of Scientific Disciplinary Fields.

The curricular requirements are automatically met by the applicants who have a Bachelor's degree belonging to classes L-8 or L-35.

In all other cases, admission applications will be evaluated by the Academic Advisor of the degree programme, or by a delegate. In this case applicants must have earned:

- at least 40 credits in the following Scientific Disciplinary Fields (settori scientifico-disciplinari): FIS/01, FIS/03, INF/01, ING-INF/05, MAT/02, MAT/03, MAT/05, MAT/08
  and
- at least 60 credits earned in the following Scientific Disciplinary Fields (settori scientifico-disciplinari): INF/01, ING-IND/16, ING-IND/31, ING-IND/32, ING-IND/33, ING-INF/01, ING-INF/02, ING- INF/03, ING-INF/04, ING-INF/05, ING-INF/06, ING-INF/07, SECS-S/01, MAT/03, MAT/05, MAT/06, MAT/08, MAT/09

The credits of the Scientific Disciplinary Fields found both in the first group and in the second group are primarily counted for the first group. The remaining credits are counted for the second group. Therefore, the credits of a course can be counted partly to reach the minimum number of credits of both groups.- Admission applications will be evaluated by the Academic Advisor of the degree programme, or by a delegate, who will decide and motivate the credit equivalence for the Scientific Disciplinary Fields that are different from the ones established by the present Regulations.

Applicants who lack less than 10 credits may be admitted to the programme by the Academic Advisor. For applicants who lack more than 10 credits, the evaluation will be subject to the final approval of the Coordinator or the Vice coordinator of the degree programme.

Applicants who do not meet the curricular requirements are required to make up for their unfulfilled curricular requirements (missing credits) before enrolment, by means of:

- **enrolment in single courses in order to make up for unfulfilled curricular requirements**: this is possible for students who need to earn up to a maximum of 60 credits. Students who enrol in single courses for this reason are allowed to include in their Personal Study Plan exclusively the courses assigned by the evaluator.
  or else,
- **credit transfer** at Bachelor's level: this is possible for students who need to earn more than 60 credits. In this case, students need to enrol in the Bachelor's degree programme that offers the credits in the specific Scientific Disciplinary Fields (core subjects and commentary subjects) required for admission to this Master's degree programme.

SUITABLE ACADEMIC PERFORMANCE

Applicants must have a suitable academic performance and an English language certificate (B2 level or above, as defined by the Common European Framework of Reference for Languages: Learning, Teaching, Assessment - CEFR).

The academic performance will be assessed as follows.

1) Applicants from Politecnico di Torino

Applicants can be admitted to the programme if they earned their Bachelor's degree in:

- 4 years (1) or less - no exam average grade required ;
- between 4 and 5 years (1) –exam weighted average grade required (2): ≥21/30
- more than 5 years– exam weighted average grade required (2): ≥ 24/30

The weighted average grade is calculated on all accrued course credits (graded on a scale of 30) counting towards the achievement of the Bachelor's degree, after having subtracted the worst 28 credits.

The duration of the Bachelor's path is calculated on the basis of the number of academic years in which the applicant has been enrolled at the university, starting from the first enrolment in the Italian university system:

- for full-time students: the duration of the Bachelor's path is equivalent to the number of academic years of enrolment.
- for part-time students: each year of enrolment is counted as half-year.
- for full-time students taking part in the "Dual Career" programme: each year of enrolment is counted as half-year, as for part-time students.

In the event of credit transfer, the duration of the Bachelor's path must be increased proportionally to the number of credits that have been recognized by Politecnico (10-60 CFU =1 year, etc.). The worst 28 credits must be subtracted proportionally to the number of validated credits.

(1) Applicants must have graduated by the end of the December Graduation Period
*(2) The weighted average is calculated as follows: ∑(grade*credits) / ∑credits*

2) Applicants from other Italian universities

Applicants who have a Bachelor's degree awarded by another Italian university must have a weighted average grade of all the exams ≥ **24/30**, regardless of the number of years it took them to graduate. The weighted average grade (∑(grade*credits) / ∑credits) is calculated on all accrued course credits (graded on a scale of 30) counting towards the achievement of the Bachelor's degree, after having subtracted the worst 28 credits.

3) Applicants with a non-Italian educational qualification

To be admitted to Politecnico Master's degree programmes, applicants must have an academic qualification awarded by an accredited/recognized foreign university, earned after completing at least 15 years of total education (including primary school, secondary school and university).
Applicants who have attended a university programme lasting five or six academic years (different from the 3+2 system) without completing it must still meet the minimum requirement of 15 years of total education (of which at least 3 years at university level) and they must have earned at least 180 ECTS credits or equivalent. Pre-university courses or foundation years cannot be counted towards the minimum number of credits or the minimum numbers of years of total education mentioned above.
The applicant's academic performance and the consistency between the degree programmes offered by Politecnico and the applicant's previous academic background are assessed by the professors designated by Coordinator of the Collegio. The evaluation is carried out on the Apply@polito platform under the section called "applicants with a non-Italian qualification."

A positive evaluation (offer of admission) allows applicants to enrol in the programme only in the academic year in which the application has been submitted. Admitted applicants who do not complete the enrolment process within the deadlines are required to apply again to the programme in the next academic years.

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More information is available at https://www.polito.it/en/education/applying-studying-graduating/admissions-and-enrolment/master-s-degree-programmes

Art. 3 – Programme curriculum

3.1 Programme overview

The curriculum of Year 1 includes mandatory courses in the following areas:

1. Data-driven processes
2. Methodologies and technologies for acquiring, storing, analysing and visualizing information
3. Predictive and non-predictive models based on machine learning algorithms
4. Mathematical and probabilistic-statistical models for the representation, transformation and modelling of data
5. Stochastic models
6. Optimization
7. Ethics in data analysis processes and data protection.

During Year 2, students tailor their studies by choosing courses that allow them to specialize in specific application areas. In Year 2, there is mandatory course focused on innovation management and extracting value from data.
To facilitate entry into the labour market (international companies and/or research centres), all courses are English-taught.

At the end of the programme students are required to prepare and defend a written thesis.

3.2 Organization of educational activities

The list of courses (compulsory and optional), curricula, possible organization of courses into modules, any pre-requisites and exclusions and the list of the faculty members responsible for the courses are available at: https://didattica.polito.it/pls/portal30/sviluppo.offerta_formativa_2019.vis?p_a_acc=2026&p_sdu=37&p_cds=470

The list of the Scientific Disciplinary Fields (Settori Scientifico Disciplinari) for each activity (specific subjects and complementary subjects) is available at: https://didattica.polito.it/pls/portal30/sviluppo.vis_aiq_2023.visualizza?sducds=37470&tab=0&p_a_acc=2026

Art. 4 - Student career

The Student Guide is published on the Teaching Portal every year before the beginning of the academic year. There is a specific Student Guide for each Master's degree programme. The Student Guide is available on the web site of the degree programme.

It contains information and deadlines on:

- academic calendar;
- Personal Study Plan and Annual Personal Study Plan;
- free choice credits;
- internships;
- tuition fees;
- dual career;
- classes and exams;
- class delivery;
- foreign language learning;
- studying abroad/mobility programmes;
- exam rules;
- transfers in/out and internal transfers;
- interruption, suspension, withdrawal, forfeiture;
- credit transfer.

Art. 5 - Final Examination

The Final Examination typically focuses on an innovative analysis, project, or application, related to topics consistent with the educational objectives of the degree programme. It should reflect the candidate's individual contribution in a final written report (Master's thesis).

The courses offered in Year 2 are organized in a way that leaves students sufficient time to work on their thesis. The Master's thesis represents a comprehensive assessment of the student's mastery of technical content, as well as organizational, communication, and individual skills, in the context of developing complex analyses or projects. The final examination typically requires the application of knowledge gained from multiple courses, the integration of additional elements and the ability to propose innovative ideas.

The Final examination is worth 22 credits, corresponding to a workload of one semester of full-time work.

The topic and the activities connected with the thesis must be agreed upon with a faculty member from the Politecnico (thesis supervisor). Students are allowed to work at their thesis project also at external organizations or companies, in Italy or abroad, under the supervision of a thesis supervisor from Politecnico and a tutor from the external institution.

Students who have earned at least 48 credits must submit their thesis application and request the thesis topic online through a dedicated procedure available in their personal page on the Teaching Portal, under the section entitled "Thesis," in compliance with the Graduation Periods deadlines published in the Student Guide – Thematic Calendar Section.

Students are required to publicly present and discuss the preparation activities for their thesis and the corresponding results (oral defence) in front of a Graduation Examining Committee, who will evaluate both the work carried out and the presentation. The Master's thesis and its oral defence must be in English.

The Graduation Examining Committee gives the final grade evaluating the student's overall academic path, his/her maturity, capacity for intellectual reasoning and the quality of the thesis.

The members of the Graduation Examining Committee evaluate the overall average grade of all the exams on a scale of 110. The committee may add up to a maximum of 8 points, considering the following factors:

- quality of the thesis work (commitment, autonomy, methodological rigor, relevance of results achieved, etc.);
- thesis oral defence (clarity in presentation, etc.);
- outstanding results achieved during the academic path (number of honours, time to graduation).

A degree with honours (lode) may be awarded at the Committee's discretion if the total score is at least 112.51.

If the thesis meets the required standards, the Committee may grant the *dignità di stampa* (printing honour) only if the final grade is 110 cum laude and the Committee's decision is unanimous.

More Information and Deadlines:

- Student Regulations
- Student Guide

Diploma Supplement:

In compliance with article 11, paragraph 8, of Ministerial Decrees No. 509/1999 and 270/2004. Politecnico di Torino issues the Diploma Supplement, a document that can attached to a higher education qualification. It is designed to improve the transparency of international qualifications, as it provides the description of the curriculum successfully completed by the student. This certificate follows the European model developed by the European Commission, the Council of Europe and UNESCO – CEPES: it is issued in two languages (Italian-English) and it is composed of approximately 10 pages.

More information at https://www.polito.it/en/education/applying-studying-graduating/academic-experience/certificates-and-other-documents

Art. 6 - References

6.1 Student Regulations

The Student Regulations define the rights and responsibilities of students and set out the administrative and disciplinary rules that all students enrolled in a degree programme or in a single learning activity at Politecnico must abide by.

6.2 Other Regulations

Particular aspects of students' academic progress are governed by specific Regulations or Calls for Applications published on its website.
In particular:

- The Tuition Fee Regulations specify the annual tuition fees that students must pay. The procedure for requesting a tuition fee reduction is explained in a dedicated guide.
- The University Regulations on Funds for Student Mobility Abroad outline the principles and rules for awarding and disbursing mobility grants. Standard procedures apply to all types of mobility programmes with unified Calls for Applications published twice a year at https://www.polito.it/en/education/applying-studying-graduating/studying-abroad
- The Code of Ethical Conduct also applies to students.