

## The Rector



HAVING REGARD TO Politecnico di Milano's Articles of Association;  
HAVING REGARD TO Ministerial Decree 3.11.1999, no. 509;  
HAVING REGARD TO Ministerial Decree 22.10.2004, no. 270;  
HAVING REGARD TO the University's Educational Rules - Regulations;  
HAVING REGARD TO the Regulations for Specialising Masters of Politecnico di Milano issued with Rector's Decree no. 2235 of 05.08.2013;  
HAVING ACQUIRED the favourable opinion of the Academic Senate during the meeting on 21.11.2022, on the establishment and activation of proposals for Specialising Masters, including the "FUNDAMENTALS OF THE AIR TRANSPORT SYSTEM" first-level Specialising Master.

### DECREES

That the first-level Specialising Master "FUNDAMENTALS OF THE AIR TRANSPORT SYSTEM" is established and activated for 2023/2024.

#### **ART. 1 Master's features**

The first-level Specialising Master "FUNDAMENTALS OF THE AIR TRANSPORT SYSTEM" is established and activated at the Aerospace Science and Technology Department.

The Specialising Master administrative headquarters is at POLI.design S.c.r.l., the reference school is the School of Industrial and Information Engineering.

The Coordinator of the Specialising Master is Prof. Giuseppe Sala, and the Vice Coordinator is Prof. Carlo Emanuele Dionigi Riboldi.

The Committee of the Specialising Master's programme comprises the following Politecnico di Milano Professors: Giuseppe Sala, Carlo Emanuele Dionigi Riboldi, Italo Oddone, Lorenzo Trainelli, Carmela Tripaldi, Alberto Luigi Michele Rolando, Alberto Terranova and Cesare Cardani.

#### **ART. 2 Educational objective and employment opportunities**

The air transport system is an inherently multidisciplinary field, where technical and managing skills are needed to face both normal and emergency operations. It has experienced a significant growth in recent years. Covid-19 pandemic strongly impacted the situation, anyway the air transport system has demonstrated resilience in many fields, and recovering is in sight. The future will not be a replication of the past. New ways shall be followed. All major players in the system, including airlines, handling and airport management companies, as well as regulators and supervisory agencies, will need to cope with this trend, relying on highly skilled professionals with an excellent technical qualification in aeronautics and a deep knowledge of the processes typical to the air transport system, from the global picture to the innermost components. The Master Course will allow the participants to develop a complete knowledge of the air transport system in its multiple aspects, by means of a structured theoretical approach well suited for engineers, followed by a practical internship period of a minimum of 4 months in a qualified organization, with the tuition of experienced industry staff. At the end of the Course, the participants will have gained a good familiarity with the field of

the air transport, which will constitute a primary asset for a successful job application in the field, easing their transition from the academic world to the job market.

Fields of working opportunities are: Airlines: Operations Planning, Airworthiness Activities Air Operators: Helicopter Operators, Bizjets Operators Airports: Airport Landside and Airside Management, Airport Facilities Management Regulatory Bodies: ENAC, EASA, Eurocontrol, others.

**The Programme will be delivered in English.**

**ART. 3  
Teaching content and organisation**

The Specialising Master will start in **March 2023** and end in **March 2024**.

The course will be structured as follows:

- From 30/01/23 to 24/3/23: foundation courses, i.e. teaching activities on introductory topics, to fill curricular gaps. No ECTS credits will be awarded.
- From 27/3/23: didactic activities with associated ECTS for all students, according to the following plan:
  - Teaching activities (40 CFU)
    - Module 0: General Abilities
    - Module 1: Civil Aviation System
    - Module 2: Cybersecurity
    - Module 3: Quality Assurance and Compliance Monitoring
    - Module 4: Safety Management System
    - Module 5: Accident Investigation
    - Module 6: Human Factors and Psychological Aspects
    - Module 7: Emergency Management
    - Module 8: Airport Capacity
    - Module 9: Airport Management System
    - Module 10: Air Transport Company
    - Module 11: Continued airworthiness, Maintenance and Engineering
  - Four months internship (10 CFU)
  - Individual activities (10 CFU)

SSD	Courses	Total hours	ECTS
	<b>General Abilities</b> Use and Application of Office Programs - Statistical application - English Aviation Lexicon - History of Air Transportation	50	2,0
ING-IND/03, ING-IND/05	<b>Civil Aviation System</b> The structure of the aviation system as a complex system. The domains of the civil aviation system: ADR, OPS, CAW, Maintenance, Airspace. Rules evolution in the aeronautical sector: the Management System as a Risk Management System. International and national bodies. Purpose of the application of the various regulations. Hierarchy of sources. Analysis of the specificities of some international and national regulatory instruments.	100	4,0
INF/01	<b>Cybersecurity</b> Legal framework inherent to the problem of security. ICAO supranational legislation and its national implementation. Security programs of managers, operators and other actors in the system. National Security Program (PNS) and other regulations that impact on security. Risk management and crisis management.	63	2,5

Not assegnato a SSD	<p><b>Quality Assurance &amp; Compliance Monitoring, Management System vs. Risk Management</b>  ISO Quality Management Systems.  System and process audits. Audit check list. Management of findings. Root Cause Analysis. Corrective/preventive action implementation and follow-up. Regulatory framework regarding compliance and quality. Role of QM CMM. Internal compliance verification programs. External ENAC / EASA surveillance programs.  Quality management strategies and effects on safety.</p>	88	3,0
ING-IND/05	<p><b>Safety Management System</b>  Safety management in the field of civil aviation. The pillars of the Safety Management System. Safety approach: reactive, proactive and predictive method. Function of the Safety Manager and the importance of reporting. Hazard Identification, Risk Assessment, Risk Mitigation. Safety Audit and Safety Assurance. Identification of the Safety Performance Indicators.</p>	75	3,0
ING-IND/03	<p><b>Accident Investigation</b>  Introduction of taxonomies for risk classification. Methods for the analysis of safety risks, qualitative and quantitative. Accident investigation. Legal relevance and regulatory framework. Investigation techniques. Data collection and tools. Laboratory tests. Specificity of accidents and analysis of possible causes. Introduction to aeronautical medicine and meteorology.</p>	113	4,5
M-PSI/01, M-PSI/06	<p><b>Human Factors &amp; Psychological Aspects</b>  Relevance of the human factor in the technical field. Classification of the types of human error, error modelling and theories. Effective factors in human performance. Human resource management, leadership and selection. Relevance of psychology in the workplace, impact on quality, safety and security. Stress factors in the aeronautical environment. Addictions. Psychology in users - fear of flying, difficulty of adaptation. Psychological support structures.</p>	100	4,5
Non assegnato a SSD	<p><b>Emergency Management</b>  ERP Emergency Recovery Plan. ERP SRA.</p>	50	2,0
ING-IND/03, ING-IND/05	<p><b>Airport Capacity</b>  Specificity of the airport system, interacting systems. Analysis and management of the airport system. Space-temporal model of operation and definition of capacity. Effective factors on capacity. Harris model, modular approach and generation model. Airport infrastructure management schemes. Concessions. Tasks and functions of the Aerodrome operator: the organization and structure of the airport manager. Regulation of operational air traffic management. Air traffic services and control, classification and specificity of airspace. Tasks and functions of the Service Providers.</p>	100	4,5

ING-IND/03, ING-IND/05	<b>Airport Management System</b> Classification and specificity of use of the airport infrastructures for fixed and rotary wing aircraft. Characteristics according to the type. Classification and specificity of airports. Identification and management of obstacles. Signage, systems and equipment for operations. Regulatory framework for public works. Structure of an infrastructure project - planning, implementation, testing. Professional figures involved. Accounting analysis of the project. Specificity of the plant engineering needs of the airport infrastructures. Hierarchies, compartmentalization and redundancies. Technological services and networks necessary for operations. Specificity of individual plants - water, electricity, telephony and data, thermal control, fire prevention, storage of fuels and particular materials.	62	2,5
Non assegnato a SSD	<b>Air Transport Company</b> Economic and organizational aspects (TCO Third Country Operation). EU 965/2012. SPA operations requiring specific approvals - SPO specialized operations- NCC non-commercial operations with complex motor-powered aircraft.	85	3,0
ING-IND/04	<b>Continuing Airworthiness, Maintenance &amp; Engineering</b> ATL system. Maintenance activities in air transport, maintenance project, CRS Certificate of Release to Service concept. Continuing Airworthiness Maintenance Organization CAMO Part145: reference standards.	100	4,0
	<b>PARTIAL</b>	986	39,5
	INTERNSHIP	500	20,0
	EXAMS	14	0,5
	<b>TOTAL</b>	<b>1500</b>	<b>60</b>

#### ART. 4 Admission requirements

The Master's is open to applicants with a A Bachelor (Laurea) or Master of Science (Laurea magistrale/specialistica) in engineering or science. For international applicants, the equivalent qualifications of the respective university systems will be considered

The Committee is responsible for the selection.

#### ART. 5 Formal requirements

The **admission application** must be submitted starting from the day after the date of this Decree and **by 28 February 2023**.

The admission application must state the following "I authorise this University, under EU Regulation no. 2016/679 on data protection, to process personal data only for purposes related to the Master's admission, enrolment and management, and agree to the disclosure of my personal information to third parties, particularly:

- public and private entities interested in possible recruitment;
- to academic programme backers; Politecnico Treasurer for services related to tuition fees;
- to entities managing unsecured loans, housing, flexible employment contracts, cultural, recreational and/or sports activities.

- I authorise the use of the data for statistical purposes in respect of the procedures and authorisations required by the cited regulation.

The extended information on data processing and data subject rights is available on the website [www.polimi.it/privacy](http://www.polimi.it/privacy)

The documentation is available electronically on the following website: <http://www.polidesign.net>

The following documentation must be sent to:

**POLI.design S.c.r.l.**

Via Don Giovanni Verità, 25

20158 Milan (MI)

Tel: 02/2399.5911

Fax: 02/2399.5970

Email: [selezioni@polidesign.net](mailto:selezioni@polidesign.net)

**\* Italian/foreign citizens who graduated in Italy**

- copy of the identity document
- copy of the Diploma Supplement or photocopy of the degree diploma

**\* Italian/EU citizens with qualification gained abroad**

- copy of the identity document
- copy of the academic qualification obtained both in original language and translated
- copy of the certificate (both in original language and translated) showing the marks given in the individual exams or Diploma Supplement (**during enrolment, the certificate of equivalence issued by the relevant area's Italian Representative abroad or certificate issued by the Enic/Naric Centres must be submitted**)

Under Art. 75 of Italian Presidential Decree 445/2000, if the Administration, after carrying out suitable checks, finds that the content of the declarations made by the applicant is untrue, the declarant forfeits any benefits obtained by the measure issued based on the untrue declaration.

**\* Non-EU citizens who graduated abroad**

Non-EU foreign citizens must submit the following to the Managing Authority:

- **copy of the degree** in the original language and its translation into Italian/English/French or Spanish
- **copy of the transcripts** with the list of exams in the original language and their translation into Italian/English/French or Spanish **or Diploma Supplement**
- **copy of a valid passport**

At least 30 days before the closing date of the registration period as indicated in this article.

The Managing Authority shall send the documentation listed above for the evaluation of qualifications, to participate in the Politecnico di Milano's Specialising Masters, **Masters and Lifelong Learning Service by the closing date of this call for applications**, under the MIUR/MAE note "Procedures for entry, stay and enrolment of students applying for visas in higher education programmes in Italy for the 2022/23" academic year.

**Following acceptance by the University, and only after confirming to the Managing Authority their participation on the Programme by the set methods, students must register on the Ministerial portal <https://www.universitaly.it> informing the Managing Authority that the registration has been completed in order for the application to be sent to the Representative responsible for issuing the entry visa.**

## **ENROLMENT METHOD:**

Students admitted to the Master's Programme must create access credentials to Politecnico di Milano's online services on the website [www.polimi.it](http://www.polimi.it). They must then enter their details and create a **person code**, attaching a valid identity document (passport for non-EU citizens), and communicate their person code to the Master's Managing Authority. Students already registered must update their personal details, if they are obsolete.

**Portal access credentials must be retained as they will be required to access all of Politecnico di Milano's services.** Lost access credentials may be autonomously restored or obtained through an OTRS ticket.

Politecnico creates a temporary student identification number to allow the student to pay the enrolment fee via online services.

The achievement of an Italian degree can be self-certified by completing the appropriate form provided by the Managing Authority. A degree obtained abroad must be documented by presenting a **declaration of value (DOV)** issued by the Italian Representative abroad (Italian Embassy or Consulate) on letterhead complete with its original stamp; **or a certificate issued by the Enic/Naric Centres.**

In addition to the above documentation, **non-EU citizens must upload a copy of a valid residence permit on their online services personal data record.**

### **ART. 6**

#### **Degree and award recognitions**

## **ISSUED CERTIFICATION**

Students admitted to the Master's final examination will pay the fee via the online services of Politecnico di Milano in order to be able to take the exam.

At the end of the Programme, upon completion of the course and after passing the final test, the student will be awarded the "Fundamentals of the Air Transport System" first-level Specialising Master's Diploma, in English language.

## **STUDENT OBLIGATIONS**

Attendance is compulsory for at least 75 per cent of the programme activities.

Cancellation from the Programme must be made in writing. The training period may not be suspended for any reason.

## **TESTING METHODS**

The final exam consists in the defense of an activity report developed during the internship activity.

### **ART. 7**

#### **Tuition fees and contributions**

The cost of the Specialising Master's is **€8,000** broken down as follows:

- **€500** – Politecnico di Milano enrolment fee
- **€7,500** – attendance fee

**The Politecnico di Milano enrolment fee will not be refunded under any circumstances**

10075X08 – CIN H – ABI 05696 – CAB 01620 – Banca Popolare di Sondrio, Agenzia 21, Via Bonardi, 4 – 20133 Milan – account holder: POLI.design S.c.r.l. – IBAN: IT19 H056 9601 6200 0001 0075 X08

Specifying the payment reason as **ID 2492 MU1 Trasporto aereo** (air transport).

**ART. 8**  
**Personal data processing**

Under EU Regulation no. 2016/679 on data protection, the University processes personal data only for purposes related to the master's admission, enrolment and management, and you agree to the disclosure of your personal information to third parties, particularly:

- public and private entities interested in possible recruitment;
- to academic programme backers; Politecnico Treasurer for services related to tuition fees;
- entities managing unsecured loans, housing, flexible employment contracts, cultural, recreational or sports activities.
- I authorise the use of the data for statistical purposes in respect of the procedures and authorisations required by the cited regulation.

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**ART. 9**  
**Publication**

This Decree is made public on Politecnico di Milano's website at <https://www.polimi.it/corsi/master-universitari-e-corsi-post-laurea/>

**FOR INFORMATION ON THE SPECIALISING MASTER'S:**

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<http://polidesign.net>

The Rector  
(Prof. Ferruccio Resta)