

INTRODUCTION

The purpose of the Diploma Supplement is to provide sufficient independent data to improve the international '*transparency*' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It is free from any value judgements, equivalence statements or suggestions about recognition. This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO.

1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1 Last name(s)

LARDO

1.2 First name(s)

GIANLUCA

1.3 Date of birth (dd/mm/yyyy)

15/11/1996

1.4 Student identification number or code (if available)

945857

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1 Name of the qualification and title conferred (in the original language)

Laurea magistrale in SPACE ENGINEERING
Dottore magistrale

2.2 Main field(s) of study for the qualification

Aerospacial and astronautic engineering (LM-20)
ISCED code: 0716

2.3 Name (in original language) and status of the awarding institution

Politecnico di Milano (Istituzione statale), Piazza Leonardo da Vinci 32, 20133 Milano

2.4 Name and status of institution (if different from 2.3) administering studies (in original language)

Same as in 2.3

2.5 Language(s) of instruction/examination

English

3
INFORMATION ON THE LEVEL AND DURATION OF THE QUALIFICATION
3.1
Level of qualification

Second Cycle QF-EHEA - Level 7 EQF

3.2
Official duration of the programme in credits and/or years

120 CFU/ECTS - 2 full time years

3.3
Access requirement(s)

First cycle degree (level 6 EQF) or comparable qualification

The admission to Laurea Magistrale (equivalent to Master of Science) is subject to an assessment process that aims to verify the candidate's adequacy. This process, according to the Law (D.M. 22/10/2004 n. 270 art. 6 comma 2 and D.M. del 16/3/2007, art.6 comma 1), is based on curricular requirements and on assessing the student's suitable preparation

4
INFORMATION ON THE CONTENTS AND RESULTS GAINED
4.1
Mode of study

The Programme is organised according to full-time attendance and foresees participation in lectures and laboratory activities. Attendance, whilst not compulsory, is highly recommended.

4.2
Programme learning outcomes

Graduates will:

- possess in-depth knowledge of the theoretical and scientific aspects of mathematics and other basic sciences and be able to use this knowledge to interpret and describe complex engineering problems or problems that require an interdisciplinary approach;
- possess in-depth knowledge of the theoretical and scientific aspects where complex problems that require an interdisciplinary approach can be identified, formulated and solved with an innovative approach;
- be able to ideate, plan, design and manage complex and/or innovative systems, processes and services;
- be able to design and manage highly complex experiments;
- possess context knowledge as well as the ability to think flexibly;
- possess knowledge of company and professional culture;
- be able to speak and write fluently in at least one European Union language, other than Italian, for professional purposes.

4.3 Programme details, individual credits gained and grades/marks obtained

Code	Educational activities	SSD Code		CFU/ECTS credits	Recogniti on	Grade	Date
052776	TECHNICAL COMMUNICATION IN ENGLISH	ING-IND/03	2.00	2.00	RPL	--	24/06/2019
099256	ADVANCED AEROSPACE CONTROL	ING-INF/04	6.00	6.00		30	04/09/2020
099259	SPACE PROPULSION	ING-IND/07	10.00	10.00		28	08/02/2021
052782	LAUNCH SYSTEMS	ING-IND/07	8.00	8.00		28	01/07/2021
083772	AEROTHERMODYNAMICS	ING-IND/06	10.00	10.00		23	12/07/2021
099266	PAYLOAD DESIGN	ING-IND/03	6.00	12.00		30	07/02/2022
		ING-IND/05	6.00				
056621	HUMAN SPACEFLIGHT AND OPERATIONS	ING-IND/05	6.00	6.00		29	15/06/2022
099260	SPACECRAFT STRUCTURES	ING-IND/04	10.00	10.00		25	29/08/2022
083794	ORBITAL MECHANICS	ING-IND/03	10.00	10.00		24	05/09/2022
091357	SPACECRAFT ATTITUDE DYNAMICS AND CONTROL	ING-IND/05	8.00	8.00		27	08/02/2023
097486	SPACE PHYSICS	FIS/01	8.00	8.00		30	07/07/2023
099262	DYNAMICS AND CONTROL OF SPACE STRUCTURES	ING-IND/04	10.00	10.00		25	05/09/2023
056077	THESIS AND FINAL EXAM			20.00		--	02/07/2024
Total CFU/ECTS credits				120			

Key

- RPL: Recognition of Prior Learning

Thesis/Final Exam

Title	Supervisor	Reference discipline
LEO Satellite Internet Prospective and Innovation in the Exponential Growth of the New Space Economy	BERNELLI ZAZZERA FRANCO	ING-IND/05 - AEROSPACE EQUIPMENTS AND SYSTEMS

4.4 Grading system and, if available, grade distribution table

Individual subjects are graded on a scale from 18 to 30, with 18 and 30 as minimum and maximum grade respectively. A "cum laude" can be added to the maximum grade as a special distinction.

GRADE DISTRIBUTION TABLE

ISCED code: 0716			Aerospatial and astronautic engineering (LM-20)										Second Cycle QF-EHEA - Level 7 EQF	
GRADE	18	19	20	21	22	23	24	25	26	27	28	29	30	30 cum laude
N marks	612	375	467	528	667	780	1269	1382	1618	2041	2269	1518	2415	1129
%	3,59	2,20	2,74	3,09	3,91	4,57	7,43	8,10	9,48	11,96	13,29	8,89	14,14	6,61
Cumulative %	100,00	96,00	94,00	91,00	88,00	84,00	79,00	72,00	64,00	54,00	42,00	29,00	20,00	6,00
Years considered: from 01/11/2020 to 31/10/2023									Total number of final marks considered: 17070					

4.5 Overall classification of the qualification (in original language)

Final mark: 103/110

Date 16/07/2024

For I and II cycle programmes the final grade is based on a maximum of 110points, with 66/110 as the lowest passing grade. In case of excellence, 110 cum laude may be awarded. The final grade is based on the curriculum as well as on the final exam.

GRADE DISTRIBUTION TABLE

Aerospatial and aeronautic engineering (LM-20)			
ISCED code: 0716		Second Cycle QF-EHEA - Level 7 EQF	
GRADE	N marks	%	Cumulative %
73	2	0.17	100,00
75	2	0.17	99,00
76	1	0.08	99,00
77	3	0.25	99,00
78	5	0.42	99,00
79	1	0.08	98,00
80	10	0.83	98,00
81	6	0.50	98,00
82	2	0.17	97,00
83	3	0.25	97,00
84	7	0.58	97,00
85	8	0.67	96,00
86	9	0.75	95,00
87	14	1.17	95,00
88	18	1.50	93,00
89	13	1.08	92,00
90	23	1.92	91,00
91	18	1.50	89,00
92	35	2.92	87,00
93	33	2.75	84,00
94	41	3.42	82,00
95	33	2.75	78,00
96	45	3.75	76,00
97	35	2.92	72,00
98	33	2.75	69,00
99	42	3.50	66,00
100	75	6.25	63,00
101	47	3.92	56,00
102	71	5.92	52,00
103	41	3.42	47,00
104	43	3.58	43,00
105	66	5.50	40,00
106	53	4.42	34,00
107	55	4.58	30,00
108	46	3.83	25,00
109	24	2.00	21,00

Person code: 10482528

Document ID: 263172/1

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Register number: 0724-0146

110	98	8.17	19,00
110 cum laude	139	11.56	11,00
Years considered: from 01/11/2020 to 31/10/2023			
Total number of final marks considered: 1200			

5
INFORMATION ON THE FUNCION OF THE QUALIFICATION
5.1
Access to further study

The qualification grants access to "Dottorato di Ricerca" (Research Doctorate), "Corso di Specializzazione di secondo livello" (2nd level Specialization Course) and "Master Universitario di secondo livello" (2nd level University Master)

5.2
Access to a regulated profession (if applicable)

Gives access to the state exam required to practice as: INGEGNERE INDUSTRIALE, INGEGNERE INDUSTRIALE IUNIOR

6
ADDITIONAL INFORMATION
6.1
Additional information
Innovative teaching: non-curricular items

These are open participation teaching activities that the Politecnico offers its students to develop soft and social skills and to enrich their personal, cultural and professional baggage.

Code	Educational activities	CFU/ECTS credits	Date
059006	FROM FERMI PILE TO IAEA: INTERNATIONAL COOPERATION IN THE NUCLEAR FIELD	1.00	27/10/2023

6.2
Further information sources

<http://www.polimi.it/>; <http://www.miur.it/>;

7**CERTIFICATION OF THE SUPPLEMENT****7.1****Date (*)****7.2****Signature (*)**

Dott.ssa Assunta Marrese

7.3**Capacity**

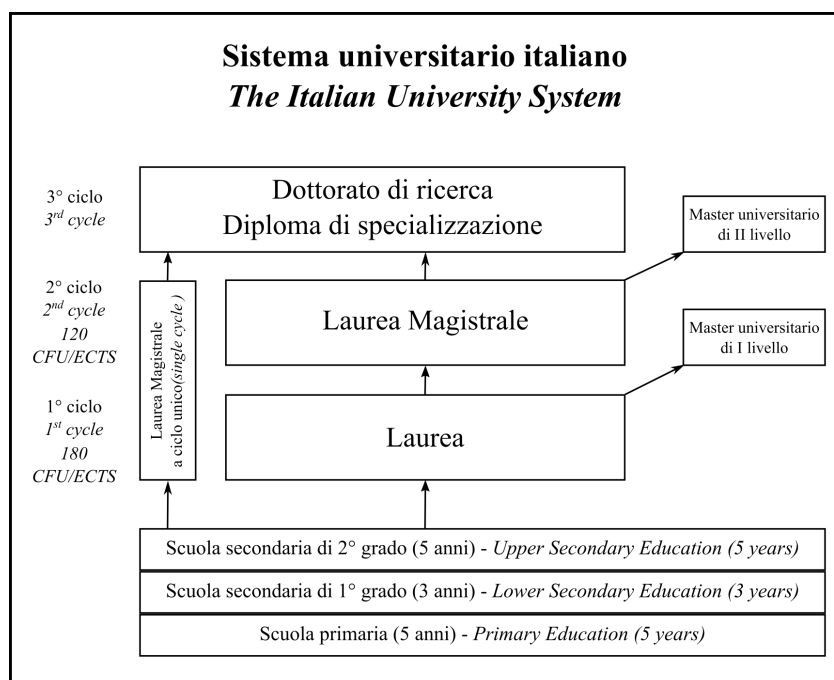
La Dirigente dell'Area Didattica

7.4**Official stamp or seal (*)**

(*) Date, signature and stamp are available only if requested by the holder of the Diploma Supplement

8
INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The Italian university system is organised in three cycles, according to the Bologna structure: the main academic degrees are the Laurea (1st cycle), the Laurea Magistrale (2nd cycle) and the Dottorato di Ricerca (3rd cycle). The system also offers other study programmes and related qualifications.


First cycle

This cycle consists exclusively of Corsi di Laurea. These degree programmes provide students with an adequate command of general scientific methods and contents as well as with specific professional skills. The general access requirement is the Italian school leaving qualification awarded after completion of 13 years of schooling and passing the relevant State examination; comparable foreign qualifications may also be accepted. Admission to some degree courses may be based on specific course requirements. The studies last 3 years. The Laurea is awarded to students who have gained 180 ECTS credits (called Crediti Formativi Universitari - CFU) and satisfied all curricular requirements, including the production of a final written paper or equivalent final project. The Laurea gives access to the Corsi di Laurea Magistrale as well as to other 2nd cycle study programmes.

Second cycle

The main degree programmes in this cycle are the Corsi di Laurea Magistrale. They provide education at an advanced level for the exercise of highly qualified activities in specific areas. Access is by a Laurea degree or a comparable foreign degree; admission is based on specific course requirements determined by single universities. The studies last 2 years. The Laurea Magistrale degree is awarded to students who have gained 120 ECTS/CFU credits and satisfied all curricular requirements, including the production and public defence of an original dissertation.

Some programmes (namely, those in dentistry, medicine, veterinary medicine, pharmacy, architecture, construction engineering/architecture, law, primary education) are defined "single cycle programmes" (Corsi a ciclo unico); for these programmes access is by the Italian school leaving qualification (or a comparable foreign qualification); admission is based on entrance exams. The studies last 5 years (6 years and 360 ECTS/CFU credits in the cases of medicine

and dentistry). A Laurea Magistrale degree is awarded to students who have gained 300 ECTS/CFU credits and satisfied all curricular requirements, including the production and public defence of an original dissertation.

A Laurea Magistrale degree gives access to Corsi di Dottorato di Ricerca as well as to other 3rd cycle study programmes.

Third cycle

The main degree programmes in this cycle are Corsi di Dottorato di Ricerca (research doctorate programmes); the students/young researchers enrolled in these programmes will acquire methodologies for advanced scientific research, will be trained in new technologies and will work in research laboratories, wherever appropriate. Access is by a Laurea Magistrale degree (or a comparable foreign degree); admission is based on a competitive exam; studies last at least three years and include the completion and public defence of an original research project.

Other programmes

- **Corsi di Specializzazione:** these are 3rd cycle programmes intended to provide students with the knowledge and skills required for the practice of highly qualified professions, mainly in medical, clinical and surgical specialities. Admission is by a Laurea Magistrale degree (or by a comparable foreign degree) and is based on a competitive exam; studies may last from 2 (120 ECTS/CFU credits) to 6 years (360 ECTS/CFU credits) depending on the discipline. The final degree awarded is a Diploma di Specializzazione.
- **Corsi di Master Universitario di primo livello:** these are 2nd cycle programmes intended to provide students with further specialization or higher continuing education after completion of the first cycle. Access is by a Laurea degree (or a comparable foreign degree); admission may be subject to additional requirements. Studies last at least 1 year (60 ECTS/CFU credits). The qualification awarded (Master Universitario di primo livello) does not give access to Corsi di Dottorato di Ricerca or to any other 3rd cycle programme, since this type of course does not belong to the general requirements established at national level, but it is offered under the autonomous responsibility of each university.
- **Corsi di Master Universitario di secondo livello:** these are 3rd cycle programmes intended to provide students with further specialization or higher continuing education studies after completion of the second cycle. Access is by a Laurea Magistrale degree (or a comparable foreign degree); admission may be subject to additional requirements. Studies last at least 1 year (60 ECTS/CFU credits). The qualification awarded (Master Universitario di secondo livello) does not give access to Corsi di Dottorato di Ricerca or to any other 3rd cycle programmes, since this type of course does not belong to the general requirements established at national level, but it is offered under the autonomous responsibility of each university.

CREDITS

Degree courses are structured in credits (Crediti Formativi Universitari - CFU). University credits are based on the workload students need in order to achieve the expected learning outcomes. Each credit corresponds to 25 hours of student workload, including independent study. The average workload of a full time student is conventionally fixed at 60 credits per year. Thus, the CFU fully coincide with ECTS credits

Classes of Degree Courses

All degree programmes of Laurea and Laurea Magistrale sharing general educational objectives are grouped into "classes". In developing the specific learning outcomes of single programmes, Universities have to comply with some national requirements for each class concerning the types (and corresponding amount of credits) of teaching-learning activities to be included. Degrees belonging to the same class have the same legal value.

Academic Titles

Those who receive the Laurea are entitled to be called "Dottore", the holders of a Laurea Magistrale have a right to the title of "Dottore Magistrale", the Dottorato di ricerca confers the title of "Dottore di Ricerca" or "PhD".

Joint Degrees

Italian universities are allowed to establish degree programmes in cooperation with Italian and foreign partner universities, on completion of which joint or double/multiple degrees can be awarded.

Further information

Italian Qualifications Framework (Quadro dei Titoli Italiani - QTI) <http://www.quadrodeititoli.it>