DIPLOMA SUPPLEMENT

POLITECNICO MILANO 1863

| Person code: 10615751 | Document ID: 205021/1 | Date of issue: 04/08/2020 | Register number: 0720-0161 |

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)**
	ROTA
1.2	**First name(s)**
	ALBERTO
1.3	**Date of birth (dd/mm/yyyy)**
	01/07/1998
1.4	**Student identification number or code (if available)**
	889895

2	INFORMATION IDENTIFYING THE QUALIFICATION
2.1	**Name of the qualification and title conferred (in the original language)**
	Laurea in BIOMEDICAL ENGINEERING Dottore
2.2	**Main field(s) of study for the qualification**
	Industrial Engineering (L-9) ISCED code: 0719
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**
	Italian

3	INFORMATION ON THE LEVEL AND DURATION OF THE QUALIFICATION

3.1	Level of qualification

First Cycle QF-EHEA - Level 6 EQF

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

180 CFU/ECTS - 3 full time years

3.3	Access requirement(s)

Italian secondary school leaving qualification or other comparable foreign qualification (level 4 EQF)
Admission is based on local selection procedures.

4	INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1	Mode of study

This Course requires a full time attendance and involves classroom and laboratory activities

4.2	Programme learning outcomes

Graduates will have to:
- possess maths' and other basic sciences' adequate knowledge for methodological and practical aspects and be able to use these skills to analyse and describe engineering problems;
- possess adequate knowledge for methodological and practical aspects of engineering sciences, related to both main and specific features, and their applications in industrial engineering, in which are able to identify, express and solve problems using the most up-to-date methods and tools;
- be able to use techniques and tools to design components, systems and processes;
- be able to conduct experiments and analyse their results;
- be able to understand the impact of engineering solutions on society and environment;
- be acquainted with professional and ethical responsibilities;
- be acquainted with business environment and culture with regards to economical, managerial and organizational aspects;
- be aware of current issues in the field;
- possess good interpersonal and decision-making skills;
- possess the basic cognitive skills in order to keep abreast of developments in the field.
- be proficient in effectively communicate, in written and oral form, in at least one European Union language other than Italian.

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

SSD Code	Code	Educational activities	CFU/ECTS credits	Recognition	Grade	Date
MAT/07 FIS/01	096217	EXPERIMENTAL PHYSICS AND RATIONAL MECHANICS	10.00		29	24/01/2018
MAT/05 MAT/03	082919	MATHEMATICAL ANALYSIS I AND GEOMETRY	10.00		24	07/02/2018
CHIM/07	083105	FUNDAMENTALS OF CHEMISTRY AND ORGANIC CHEMISTRY	10.00		22	19/02/2018
FIS/01	084040	FUNDAMENTALS OF ELECTROMAGNETISM	10.00		26	06/07/2018
MAT/05	083041	MATHEMATICAL ANALYSIS II (FOR BIOMEDICAL ENGINEERING)	7.00		20	12/07/2018
BIO/09	060001	BIOLOGY AND PHYSIOLOGY	10.00		22	16/07/2018
ING-INF/04	085849	FUNDAMENTALS OF AUTOMATIC CONTROL	7.00		26	16/01/2019
ING-IND/34	083118	MECHANICS OF CONTINUA AND STRUCTURES	8.00		24	18/01/2019
ING-IND/31	085850	PRINCIPLES OF ELECTRICAL CIRCUITS AND APPLICATION	8.00		27	25/01/2019
ING-IND/13	097534	APPLIED MECHANICS TO MACHINES	5.00		24	18/02/2019
ING-IND/10	096226	THERMODYNAMICS AND HEAT TRANSFER	5.00		26	19/06/2019
ING-INF/01	083533	ELECTRONICS	10.00		27	21/06/2019
ING-INF/05 ING-INF/06	085853	COMPUTER SCIENCE AND ELEMENTS OF MEDICAL INFORMATICS	10.00		28	04/07/2019
MAT/06 ING-INF/06	085856	BASICS OF STATISTICS AND BIOMEDICAL SIGNALS	10.00		26	22/07/2019
ING-IND/34	054284	BIOMECHANICS	12.00		27	16/01/2020
ING-IND/34	054287	CHEMICAL BIOENGINEERING	10.00		29	18/01/2020
ING-INF/06	054290	BIOELETTROMAGNETISM AND BIOMEDICAL INSTRUMENTATION	10.00		30	19/02/2020
ING-IND/35	060076	BUSINESS ADMINISTRATION	5.00		29	19/06/2020
MAT/08	083049	INTRODUCTION TO NUMERICAL METHODS	5.00		28	07/07/2020
ING-IND/34 ING-INF/06	052361	PROJECT	5.00		--	08/07/2020
	085870	FINAL WORK (BIO LP)	3.00		--	08/07/2020
ING-IND/34	083047	BIOMATERIALS [C.I.]	10.00		30	13/07/2020
		Total CFU/ECTS credits	**180**			

Thesis/Final Exam

Title	Supervisor	Reference discipline
Analisi delle variabilita' delle caratteristiche di reti microvascolari 3D	COSTANTINO MARIA LAURA	ING-IND/34 - INDUSTRIAL BIOENGINEERING

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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: 0719			Industrial Engineering (L-9)									First Cycle QF-EHEA - Level 6 EQF	
GRADE	18	19	20	21	22	23	24	25	26	27	28	29	30	30 cum laude
N marks	12471	8642	10784	10859	12223	13684	15492	14651	14318	13980	12639	7541	11917	5310
%	7,58	5,25	6,56	6,60	7,43	8,32	9,42	8,91	8,70	8,50	7,68	4,58	7,24	3,23
Cumulative %	100,00	92,00	87,00	80,00	74,00	66,00	58,00	48,00	39,00	31,00	22,00	15,00	10,00	3,00
Years considered: from 01/11/2016 to 31/10/2019								Total number of final marks considered: 164511						

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4.5	Overall classification of the qualification (in original language)

Final mark: 104/110
Date 22/07/2020

For I and II cycle programmes the final grade is based on a maximum of 110 points, 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

Industrial Engineering (L-9)			
ISCED code: 0719		First Cycle QF-EHEA - Level 6 EQF	
GRADE	N marks	%	Cumulative %
70	1	0.01	100,00
74	1	0.01	99,00
75	11	0.15	99,00
76	9	0.12	99,00
77	18	0.24	99,00
78	39	0.53	99,00
79	59	0.80	98,00
80	76	1.03	98,00
81	98	1.33	97,00
82	140	1.89	95,00
83	164	2.22	93,00
84	195	2.64	91,00
85	273	3.70	89,00
86	306	4.14	85,00
87	346	4.68	81,00
88	320	4.33	76,00
89	353	4.78	72,00
90	414	5.64	67,00
91	387	5.24	61,00
92	346	4.68	56,00
93	350	4.74	51,00
94	320	4.33	47,00
95	288	3.90	42,00
96	301	4.07	38,00
97	255	3.45	34,00
98	216	2.92	31,00
99	241	3.26	28,00
100	198	2.68	25,00
101	210	2.84	22,00
102	159	2.15	19,00
103	152	2.06	17,00
104	154	2.08	15,00
105	137	1.85	13,00
106	127	1.72	11,00
107	111	1.50	9,00
108	113	1.53	8,00
109	91	1.23	6,00

110	145	1.96	5,00
110 cum laude	264	3.57	3,00
Years considered: from 01/11/2016 to 31/10/2019			
Total number of final marks considered: 7388			

5	INFORMATION ON THE FUNCION OF THE QUALIFICATION

5.1	Access to further study

The qualification grants access to "Laurea Magistrale" (2nd degree), "Corso di Specializzazione di primo livello" (1st level Specialization Course) and "Master Universitario di primo livello" (1st level University Master)

5.2	Access to a regulated profession (if applicable)

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

6	ADDITIONAL INFORMATION

6.1	Additional information

6.2	Further information sources

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

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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

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| **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.

Sistema universitario italiano
The Italian University System
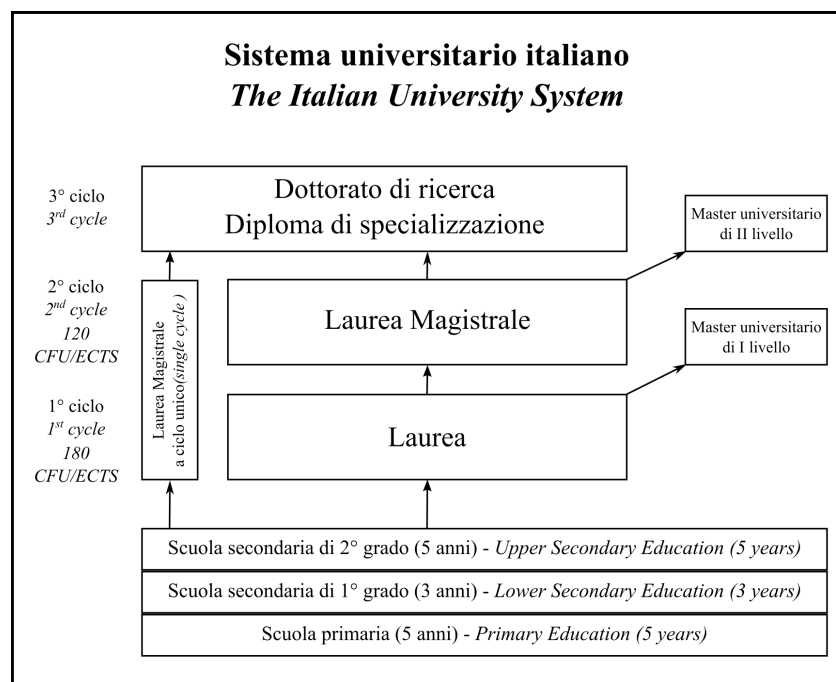
First cycle

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