ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DIPLOMA SUPPLEMENT

STEFANO FRONZONI

DIPLOMA SUPPLEMENT

The Diploma Supplement was developed by the European Commission, Council of Europe and by UNESCO/CEPES. The purpose of the 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. Information is provided in eight sections. Where information is not provided, an explanation will give the reason why.

1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1 Family Name

FRONZONI

1.2 First Name

STEFANO

1.3 Date, Place, Country of Birth

Date of Birth (dd/mm/yy)	*Place of Birth*	*Country of Birth*
02/10/98	FORLI'	ITALIA

1.4 Student Number or Code

Matriculation Number	*National Personal Identification Number*
0000832898	FRNSFN98R02D704J

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1 Name of Qualification, Name of Title

Qualification	*Title*
Laurea in Mathematics	Dottore

2.2 Main Field of Study for the Qualification

L-35	Mathematics

2.3 Name of Institution Awarding Qualification Status (Type /Control)

Name of Institution	*Status*
ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA SEDE DI BOLOGNA, CESENA, FORLI, RAVENNA, RIMINI	STATE UNIVERSITY

2.4 Name of Institution Administering Studies Status (Type / Control)

See 2.3

2.5 Language(s) of Instruction / Examination

Italian

3 INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1 Level of Qualification

First cycle

3.2 Official Length of Programme

3 years

3.3 Access Requirements

Secondary school diploma or other suitable high school qualification or diploma obtained abroad. The degree programme includes an entrance exam to assess basic knowledge; students not passing the test will be assigned additional learning requirements which must be completed during the first year of the programme.

4 INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1 Mode of Study

Full time	Standard teaching

4.2 Programme Requirements

Following the official guidelines for Degree Classes in Mathematical Science, the degree programme combines the teaching reform measures already being implemented within this degree programme in mathematics, the expectations of the working world as experienced by Bologna University maths graduates, and the material and human resources that our University possesses. The proposal is to seize the opportunity of the present organizational changes to bring in a reform of maths teaching, serving two educational needs: to train young researchers, future teachers (after completion of a teacher-training programme and passing the selection processes as per current law) and popular science writers; and to meet the demand for personnel possessing a solid grounding in mathematics which is increasingly being expressed by public and private research institutes, industry, banks, insurance and finance firms, and more generally the high-tech service sector. The new plan for the degree programme prioritizes the qualities of a maths graduate that are most appreciated by the world of work: a capacity for synthesis and abstraction, and hence for proposing new solutions to problems, backed by high-grade calculating and ICT skills. To equip graduates with such qualities the degree programme in mathematics includes:
- training in basic algebra, mathematical analysis, geometry, mathematical physics, numerical analysis, computer science and general physics;
- a newly opened option for training in basic Mathematical Statistics, Mathematical Logic and Operations Research;
- laboratory work in ICT and computational mathematics, as well as practice in the English language.

BASIC TEACHING/LEARNING ACTIVITIES	Basic Mathematics		60 ÷ 66
	Information Technology		6 ÷ 11
	Physics		9 ÷ 15
		Total	**75 ÷ 92**
SPECIFIC TEACHING/ LEARNING ACTIVITIES	Models and Application		20 ÷ 26
	Theoretical Studies		32 ÷ 38
		Total	**52 ÷ 64**
RELATED/SUPPLEMENTARY TEACHING/LEARNING ACTIVITIES	Related or Additional Studies		18 ÷ 21
		Total	**18 ÷ 21**
ELECTIVE TEACHING/ LEARNING ACTIVITIES	To be chosen by the student		12
		Total	**12**

FINAL EXAMINATION AND FOREIGN LANGUAGE SKILLS	Knowledge of at least one foreign language		3
	Final examination		3
		Total	**6**
OTHER ACTIVITIES	Nessun Ambito		
		Minimum	**3**
		TOTAL	**180**

4.3 Programme Details and the individual grades / marks / credits obtained

The curriculum carried out by the student is compliant with the teaching regulations (see 4.2).

Learning activities recognized in the last attended programme

Learning Activities	*Grade*	*SSD*	*CFU / ECTS*
Credits in the field of MAT/05	RP	MAT/05	8
English Language Test B - 1	RC		3
Geometry 3	RP	MAT/03	13
Mathematical Analysis Complements	RP	MAT/05	6
Mathematical Physics 3	RP	MAT/07	7
Mathematical Probability and Statistics 1	RP	MAT/06	9
Mathematical Statistics	RP	MAT/06	6
Probability and Statistics	RP	MAT/06	6

Learning activities successfully completed in the last attended programme

Learning Activities	*Grade*	*ECTS Scale*	*Date (dd/mm/yy)*	*SSD*	*CFU / ECTS*
Algebra 1	30	B	08/02/18	MAT/02	8
Algebra 2	28	B	22/01/19	MAT/02	7
ANALISI MATEMATICA 1A	30L	A	25/01/18	MAT/05	9
ANALISI MATEMATICA 1B	30L	A	27/06/18	MAT/05	7
ANALISI MATEMATICA 3	30L	A	08/07/20	MAT/05	7
Computer Science	30L	A	20/06/18	INF/01	8
Credits in the field of MAT/05 *replaced by* Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)	30L	A	31/08/20	MAT/05	8
General Physics	30	B	26/07/19	FIS/01	12
GEOMETRIA 1A	30L	A	12/01/18	MAT/03	9
GEOMETRIA 1B	30L	A	04/06/18	MAT/03	7
Geometry 2	30L	A	20/09/19	MAT/03	7
Geometry 3 *replaced by*	30L	A	31/08/20	MAT/03	13

Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)					
Mathematical Analysis Complements *replaced by* Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)	30L	A	31/08/20	MAT/05	6
Mathematical Analysis 2	30L	A	03/06/19	MAT/05	13
Mathematical Physics 1	30	B	26/07/18	MAT/07	7
Mathematical Physics 2	30L	A	17/06/19	MAT/07	7
Mathematical Physics 3 *replaced by* Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)	30L	A	31/08/20	MAT/07	7
Mathematical Probability and Statistics 1 *replaced by* Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)	30L	A	31/08/20	MAT/06	9
Mathematical Statistics *replaced by* Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)	30L	A	31/08/20	MAT/06	6
Numerical Computing	30L	A	09/07/19	MAT/08	10
Probability and Statistics *replaced by* Differential Geometry III Math3021 (ERASMUS) Complex Analysis II Math2011 (ERASMUS) Mathematical Physics II Math2071 (ERASMUS) Probability II Math2647 (ERASMUS) Mathematical Biology III Math3171 (ERASMUS) Statistical Concepts II Math2041 (ERASMUS)	30L	A	31/08/20	MAT/06	6
Vocational activities	ID		06/06/19		3
Final Examination	Successfully Completed				3

Legenda
ECTS SCALE: ECTS grading scale; **N.A.:** Not Applicable, course taken in a different University; **RC:** Recognised; **SSD:** Scientific field / Discipline; **RP:** Replaced by; **MAT/05:** Mathematical Analysis; **MAT/03:** Geometry; **MAT/07:** Mathematical Physics; **MAT/06:** Probability and Statistics; **MAT/02:** Algebra; **INF/01:** Informatics; **FIS/01:** Experimental Physics; **MAT/08:** Numerical Analysis; **CFU/ECTS:** Credits (according to the national system) = ECTS; **Exam:** refers here to studies carried out in the University system before the 1999 reform. Exams were the units to be successfully taken to obtain the degree.

Dissertation Title
Il metodo GMRES

4.4 Grading Scheme, grade distribution guidance

Passing grade for each exam or learning activity can range from 18 to 30. The highest possible grade is 30 e lode (30L). For some exams and activities there is no grade, but only "approved" (ID).

Grade	*ECTS Scale*	*% of students who have obtained such grade*
30 e lode	A	10
28 - 30	B	33
25 - 27	C	27
20 - 24	D	24
18 - 19	E	6

4.5 Overall Classification

Date (dd/mm/yy)
25/09/20

Gained Mark
110 e lode

The Board evaluates the candidate through his/her study curriculum and the final examination; the Board expresses its evaluation as a mark out of one hundred and ten. The examination is passed with a minimum score of 66/110. In the event of the maximum score being awarded (110/110), the Board may unanimously decide also to award the "cum laude" honour.

Grade	*ECTS Scale*	*% of students who have obtained such grade*
110 e lode	A	20
104 - 110	B	27
96 - 103	C	28
88 - 95	D	19
66 - 87	E	6

5 INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1 Access to Further Study

It gives access to second cycle studies (*laurea specialistica/magistrale*) and *master universitario di primo livello*.

5.2 Professional Status

Not available.

6 ADDITIONAL INFORMATION

6.1 Additional Information

Not available

6.2 Additional Information Sources

University web page: http://www.unibo.it; Ministery web pages with description of all accredited italian Universities programmes and informations about Italian higher education: http://offf.miur.it and http://www.study-in-italy.it; NARIC Italia (National Academic Recognition Information Centre). Information Centre on Academic Mobility and Equivalence: http://www.cimea.it

7 CERTIFICATION OF THE SUPPLEMENT

7.1 Date

Date (dd/mm/yy)
27/09/20

7.2 Signature

ABIS - Libraries and Study Services Division: Dott. Michele Menna

Information report without handwritten signature, substituted with the name of the Director pursuant to article 3, clause 2 of law no. 39 passed on 12/2/1993. Copy of this document, issued in the original, is kept in this University's digital archives.

7.3 Capacity

Head of Registry

7.4 Official Stamp / Seal

8 INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The Italian University System
(DM 509/99 and DM 270/2004)

Since 1999, Italian university studies have been reformed so as to meet the objectives of the "Bologna process". The university system is now organised in 3 cycles: the *Laurea*, the 1st cycle academic degree, grants access to the 2nd cycle, and the *Laurea specialistica/magistrale*, the main degree of the 2nd cycle, gives access to 3rd cycle courses awarding the *Dottorato di ricerca*. In addition to the three sequential degrees mentioned above, the system offers other programmes with their respective degrees.

First cycle. First cycle studies consist exclusively in *Corsi di Laurea*, aimed at guaranteeing students an adequate command of general scientific methods and contents as well as specific professional skills. The general access requirement is the school leaving qualification awarded on completion of 13 years of global schooling and after the relevant State examinations; also comparable foreign qualifications may be accepted. Admission to individual degree courses may be subject to specific course requirements. *Laurea* courses last 3 years. The *Laurea* (1st degree) is awarded to students who have earned 180 credits; the completion of a training period and the defence of a thesis may also be required. The *Laurea* grants access to competitions for the civil service, to regulated and non-regulated professions, and to 2nd cycle courses.

Second cycle. Second cycle studies include the following typologies:

A) *Corsi di Laurea specialistica/Corsi di Laurea magistrale*; they are aimed at providing students with an advanced level of education for the exercise of a highly qualified activity in specific areas. Access is usually by a *Laurea* or a comparable foreign degree; admission is subject to specific course requirements determined by individual universities; workload: 120 credits; length: 2 years. The awarding of the degree, *Laurea specialistica/magistrale* (2nd cycle degree of the "Bologna process") is conditional on the defence of a thesis. The change of the name from *Laurea specialistica* into *Laurea magistrale* was decided in 2004.

A limited number of 2nd cycle programmes (dentistry, human medicine, pharmacy, veterinary medicine, architecture, law), are defined *Corsi di Laurea specialistica/magistrale a ciclo unico* (one-block LS/LM courses); access is by the school leaving diploma or a comparable foreign qualification; admission is subject to selective entrance exams; each degree course is organised in just one-block of 5 years and 300 credits (only human medicine requires 6 years and 360 credits). All *Lauree specialistiche/magistrali* grant access to competitions for the civil service, to regulated and non-regulated professions, research doctorate programmes and all the other degree courses of the 3rd cycle.

B) *Corsi di Master universitario di primo livello*. They consist in advanced scientific courses or higher continuing education studies open to the holders of a *Laurea* or a comparable foreign degree; admission may be subject to additional conditions. Length: minimum 1 year; workload: 60 credits at least. The *Master universitario di primo livello* does not give access to the 3rd cycle.

Third cycle. Third cycle studies include the following typologies:

A) *Corsi di Dottorato di Ricerca* aim at training students for very advanced scientific research; they adopt innovative teaching methodologies, updated technologies, training periods abroad and supervised activities in specialized research centres. Admission requires a *Laurea specialistica/ magistrale* (or a comparable foreign degree) and to pass a specific competition; studies last a minimum of 3 years; the doctoral student must work out an original dissertation to be defended in the final examination.

B) *Corsi di specializzazione* are devised to provide students with knowledge and abilities as requested in the practice of highly qualified professions; they mainly concern medical, clinical and surgical specialities. Admission requires a *Laurea specialistica/ magistrale* (or a comparable foreign degree) and the passing of a competitive examination; course length varies in relation to subject fields. The final degree, *Diploma di specializzazione*, gives the right to the title as *Specialista*.

C) *Corsi di Master universitario di secondo livello* consist in advanced scientific courses or higher continuing education studies, open to the holders of an LS or a comparable foreign degree. Length: minimum 1 year; workload: 60 credits at least.

Credits: degree courses are usually structured in credits. A university credit generally corresponds to 25 hours of global work per student, time for personal study included. The average workload of a full time student is conventionally fixed at 60 credits per year.

Classes of degree courses: all degree courses sharing educational objectives and teaching-learning activities are organised in groups called *classi*. The content of individual degree courses is autonomously determined by universities; however, when establishing a degree course, individual institutions have to adopt some general requirements fixed at national level. Degrees belonging to the same class have the same legal validity.

Academic titles: the *Laurea* confers the title *"Dottore"*, the *Laurea specialistica/magistrale* that of *"Dottore magistrale"*, the *Dottorato di ricerca* that of *"Dottore di ricerca"*.

Joint degrees: Italian universities may establish degree courses in cooperation with foreign partner universities; on completion of integrated curricula joint or double/multiple degrees are awarded.