PHD PROGRAMME TABLE 37TH CYCLE

Section "Admission Exams" integrated on 21/07/2021

PROGRAMME'S NAME	MATHEMATICS
DURATION	3 years
PROGRAMME START DATE	01/11/2021
LANGUAGES	Italian and English
MANDATORY STAY ABROAD	3 months
COORDINATOR	Prof.ssa Valeria Simoncini (valeria.simoncini@unibo.it)
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PhD POSITIONS	7
ADMISSION PROCEDURE	Qualifications evaluation Oral examination

Available Positions and Scholarships

Pos. n.	Financial Support	Description	Positions linked to research topics
1	PhD Scholarship	Totally funded by the University of Bologna general budget	
2	PhD Scholarship	Totally funded by the University of Bologna general budget	
3	PhD Scholarship	Totally funded by the University of Bologna general budget	
4	PhD Scholarship	Totally funded by the University of Bologna general budget	
5	PhD Scholarship	Totally funded by the University of Bologna general budget	
6	PhD Scholarship	Co-funded by the University of Bologna general budget and by the Department of Mathematics	
7	PhD Scholarship	Totally funded by the University of Bologna general budget under the "Progetti di Sviluppo Strategico dei Dipartimenti (PSSD)" initiative	Mathematical models for life sciences, cognitive neurosciences, data analysis, social sciences and finance

Admission Exams

	DATE AND TIME	RESULTS
Qualifications and research proposal evaluation	Applicants' participation is not required	Available from **28/08/2021****
Oral examination	**Date**: starting from **06/09/2021** - **9 a.m. CEST*** **Place**: Remotely, using Microsoft Teams.	Available from **15/09/2021****

* In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral examination detailed schedule shall be made available on the webpage Studenti Online together with the results of the qualifications evaluation. **During the oral examination applicants may express their interest in the positions linked to specific research subjects**.

** The **results of the admission exams** will be available on the webpage Studenti Online (select "summary of the requests in progress" > "see detail" and open the .pdf file at the bottom of the page. **No personal written communication will be sent to applicants concerning the examinations results**.

Required and Supporting Documents to be attached to the application

(only documents in Italian, English, French, German and Spanish shall be considered as valid and be assessed by the Admission Board)

Only qualifications obtained during the last 5 calendar years shall be taken into consideration, except for the University Degree. The Admission Board will assess the relevance of the supporting documents to the PhD Programme.

REQUIRED DOCUMENTS	
Identity document	Valid identity document with photo (i.e. identity card, passport)
Curriculum Vitae	No specific CV format is required
Degrees	Documents attesting the awarding of the first and second cycle degrees, the exams taken and the marks obtained (see Art. 3 of the Call for Applications)
SUPPORTING DOCUMENTS	
Thesis abstract	Abstract of the second cycle degree thesis. Graduands may submit the draft of their thesis (abstracts cannot exceed 5.000 characters, including spaces and formulas, if present. The above figure does not include: title, outline, images such as graphs, diagrams, tables etc. if present).
Reference Letter/s	**No more than 3 reference letters** signed by **Italian and/or International academics and professionals** in the research field, which do not form part of the Admission Board, attesting the suitability of the applicant and his/her interest for the scientific research. Letters shall be uploaded following the procedure on [Studenti Online,](#) detailed in the Call for Applications (Art. 3.2).
Personal Statement	The statement shall include **the reasons prompting the applicant to attend the PhD Programme** and those relevant experiences and research interests, that make the applicant suitable for the specific PhD Programme (3000 characters maximum, including spaces).
Publications	List of publications (i.e. monographs, articles on scientific journals), minor publications (conference papers, volume chapters, etc.) and abstracts and posters presented during academic conferences.
Other documents	- University Master Courses (Master Universitari di I e II livello), Postgraduate vocational training programmes and/or specialisation programmes relevant to the PhD Programme - Research activity - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research units - Periods of study abroad, outside the country of origin (e.g. Erasmus programme or other similar mobility programmes) - Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc)

Evaluation criteria *

Scores will be expressed in points out of 100, as follows.

1. Qualifications Evaluation

Minimum score for admission to the oral examination: 30 points, Maximum score: 50 points

University degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	10 points max
Publications	3 points max
Reference letters	16 points max
Curriculum, personal statement and other documents	21 points max

2. Oral examination

Minimum score for eligibility: 30 points, Maximum score 50 points

English proficiency	2 points max
General knowledge of issues encompassed by the PhD Programme	48 points max

Oral examination aims to assess the suitability of the applicant for scientific research as well as the general knowledge of issues encompassed by the PhD Programme (see the list of research topics at the bottom of the present document). During the oral examination, **English language proficiency shall be assessed.** The oral examination is carried out in **Italian or in English**.

*Possible further evaluation criteria will be available on the University website, selecting the relevant PhD Programme > "More information", at the bottom of the page in the section "Notices".

Final Ranking List and Enrollment

After the publication of the results of the oral examination, the **final ranking list** will be available on the University website, selecting the relevant PhD Programme > "More information", section "Notices" at the bottom of the page. Following the publication of the final ranking list, successful applicants shall **enroll** on Studenti Online by the deadline indicated on the University website, selecting the relevant PhD Programme > "More information".

If a successful **applicant withdraws from a position**, the following applicant in the ranking list, who is also eligible for the specific position, will be contacted. During the replacement procedure, the new terms of enrollment shall be communicated via e-mail to the chosen applicant.

Considering the expressions of interest above for **topic-related positions**, the Admission Board shall express its view on the suitability of the interested applicants, taking into account their specific skills, experience and attitude.

Topic-specific positions will be awarded on the basis of the eligibility stated by the Admission Board. Should the abovementioned position remain vacant, eligible applicants from the general ranking list may be contacted.

Research Topics

- Partial differential equations
- Calculus of variations
- Harmonic analysis
- Probability theory
- Algebraic geometry
- Commutative algebra
- Complex analysis
- Algebraic topology
- Combinatorics
- Group theory
- Continuum mechanics
- Electromagnetic theory
- Statistical Mechanics and Quantum mechanics
- Dynamical systems and ergodic theory
- Numerical linear algebra
- Numerical methods for optimisation
- Mathematical finance
- Numerical models and methods for inverse problems and image processing
- Mathematical neuroscience
- Data analysis
- Didactics of mathematics