IMT SCUOLA ALTI STUDI LUCCA

IMT School PhD Programme in "Systems Science"

Call for applications 2026/2027
Executive Summary

PHD PROGRAMME DESCRIPTION

The IMT School for Advanced Studies Lucca has launched the call for applications for the PhD Programme in "Systems Science" (2026/2027 academic year).

The IMT School adopts equal opportunity principles in its selection procedures and rejects any type of discrimination based on sex, gender identity, nationality, ethnicity, religious belief, sexual orientation, state of health, and any other status or quality that is not strictly relevant to the call outlined in this document.

Programme official duration: 3 years.

Programme starts on 1 November 2026.

Programme official language: English.

Scholarships: 13, of which

- 10 funded by the IMT School;
- 3 funded by The Italian Institute of Artificial Intelligence (AI4I) on topics such as "**Safe Control via Generative AI**" and "**Optimal and Formal Control of Non-Linear Uncertain Systems**".

The number of positions may be increased in the event that additional funding is made available after the publication of the Call.

Scholarship gross amount: 16,243.00 Euros/year (see the "Scholarships" paragraph).

Additional benefits:

- All PhD students admitted are exempt from paying tuition fees, although they are still responsible for paying the yearly Regional Education Tax (currently 140.00 Euros/year);
- All PhD students are offered free meals (lunch and dinner) at the on-campus canteen;
- All PhD students are provided with free accommodation in shared double rooms within the campus residential facilities.

REQUIREMENTS

Applications are open to candidates who meet the following requirements:

1. **Degree**:
   - "Laurea Magistrale" or "Specialistica" (according to DM no. 509, of November 3, 1999), or a four- or five-year degree (according to the previous rules of the Italian higher education system) obtained in Italy;
   - Foreign degrees that give access to the PhD in the Country where it has been awarded.

For the selection procedure, candidates are required to upload the documents indicated in Table 2 - Attachments to the application.

Applicants, who obtain their degree by no later than **31 October 2026,** can also apply. These candidates will be admitted to the selection procedure "with reserve" and must provide their degree certificate by the date of enrollment, or they will be excluded from the Programme.

2. **Knowledge of the English language**: Applicants are required to indicate their level of English.

APPLICATION

The **application form** must be **mandatorily** filled out in **English** through the School's online procedure **by 25 May 2026 at 1:00 p.m. (CEST)**.

Applicants must upload the **documents** in **PDF**. The **maximum size is 30MB** for each attachment.

The Selection Committee will accept **attachments** in **Italian or English only** (unless otherwise specified in the table below).

Table 1: Information		
Track	compulsory	**It is possible to apply for more than one track, submitting a new application for each track selected**. Applicants cannot register more than once with different email addresses and/or different names or submit more than one application for the same track (in this case, only the last one will be considered valid).
Personal information	compulsory	In this section, applicants must enter their personal data (name, address, contact details, etc.).
English Language Level	compulsory	Applicants must indicate their level of English.
Additional information/Interview	compulsory	Applicants have to indicate the modality for the interview (IMT School campus, videoconference, or similar, or by telephone at an Italian embassy/consulate).
Additional information/Disability	optional	Applicants should indicate if they need assistance to participate in the selection procedure.
Additional information/How did you first find out about IMT?	compulsory	Applicants are required to indicate how they found out about the IMT School.
Education	compulsory	Applicants are required to indicate their university degrees (whose duration must be equivalent to at least 4 years of university studies), the average exam mark, and final grade (if any) for each degree obtained.

Additional qualifications	optional	In this section, applicants may list any other qualifications considered relevant in relation to their application.
Interest in the project-based scholarship	compulsory	Candidates applying for the PhD Programme in "Cultural Systems" are required to indicate their interest in the project-based scholarship ("Simulation of soft tissues for biomechanics applications").
Publications	optional	Applicants can list their own published articles, books, or any material that may be considered relevant for the PhD and research activity.

Table 2: Attachments			
1	**Copy of National Identity Card or Passport**	compulsory	Applicants have to upload a copy of a valid identity document: • For Italian and EU citizens: Valid National Identity card or Passport • Non-EU applicants: National Identity card or Passport (the latter is highly recommended). The copy has to be **signed by the candidate, indicating the date and place of the signature**. In particular, the document has to contain the applicant's photograph, personal data, and document number, place and date of issue. If any of the above information is missing, the document will not be accepted. If the document is not in English or Italian, a translation into English or Italian should also be uploaded (an official/legal translation is not required). In the event that the copy of the document is unreadable, the Selection Committee may request a new submission.
2	**Curriculum vitae et studiorum/Resume**	compulsory	Applicants must upload their curriculum vitae et studiorum/resume **in Italian or English (the latter is highly recommended)**, indicating their university degrees, work and research experience, and publications (if any).
3	**Education**	compulsory	Candidates are required to upload one of the following documents **in Italian or English**: • for **degrees obtained in Italy** and/or in **France**, **Ireland**, **Belgium**, **Denmark** (Bruxelles Convention of May 25, 1987), and **Germany** (Italian-German Convention, ratified by the Law no. 176 of 1973): a self-declaration stating the possession of a degree, conferral date, issuing University, and final grade;

			• for **degrees obtained in all other EU and non-EU countries**: an official certificate indicating the possession of a degree, conferral date, issuing University, and final grade.
4	**Academic transcript/Diploma supplement**	compulsory	For each degree, the applicant has to attach one of the documents listed below **in Italian or English (English is highly recommended)**: • **Academic transcript**: an official document detailing the course, classes attended or subjects studied and results, completion date, graduation date; or alternatively, • **Diploma Supplement**: document produced by the University accompanying the diploma, providing a standardized description of the nature, level, context, content, and status of the studies completed by the applicant (https://ec.europa.eu/education/diploma-supplement_en).
5	**Research Statement**	compulsory	To best evaluate each candidate's aptitude for the School's PhD Programmes, all candidates must upload a document (**maximum 10,000 characters, spaces included**) **mandatorily in English**. The research statement must include a summary of the candidate's academic background, scientific knowledge, research experience, ideas for future research projects, and motivations for pursuing a Ph.D. study at the IMT School.

If the application lacks a piece of information or an attachment referred to as "compulsory", applicants can be conditionally admitted to the selection procedure. Their application will be considered valid only if they produce the required documents by the day scheduled for the interview.

The correct completion of the online application procedure is **confirmed by an automatic email** sent to the email address indicated by each applicant while registering for the procedure; the message only confirms the receipt of the application. The School will not verify the validity and completeness of applications before the call closes.

After the submission, no changes are allowed to the entered data.

Candidates are also required to fill out a **separate section of the application form** dedicated to referees:

References	compulsory	Applicants are required to provide the **names and contact information** of **two referees**. The **referees** who are invited to submit a **reference letter in English** through the IMT School's online application system, by **1 June 2026, at 1:00 p.m. (CEST)**, will receive an automatic notification from the School's application system. Applicants will receive an automatic notification when a letter is submitted, but they may not access any reference provided.

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SELECTION COMMITTEE

The Selection Committee is nominated by decree by the Rector of the IMT School in accordance with the School regulations.

The Selection Committee may be assisted by Preliminary Evaluation Committees, which are also nominated by the Rector and can comprise IMT School Professors, Assistant Professors, Post-Doctoral Fellows, or experts from relevant fields.

EVALUATION CRITERIA AND SELECTION PROCEDURE

Evaluation criteria

The Selection Committee will evaluate candidates'

- academic background, knowledge, skills, and scientific potential;
- general aptitude for research and potential to collaborate in the specific research activities of the selected Track in the application form;
- interdisciplinarity, knowledge, and skills with reference to the multidisciplinarity of the IMT School PhD Programmes;
- pertinence to a track different than the one selected in the application form.

Assessment of qualifications

The first phase of the selection procedure is the assessment of qualifications. This assessment is carried out in relation to the specifics of the PhD Programmes and specifically to determine who is admitted to the interview.

In the assessment of qualifications phase, the evaluation of the candidates is carried out by the Committee defined in the previous paragraph "Selection Committee" and based on the candidates' application form, uploaded documents, and reference letters provided by referees.

Based on the assessment of qualifications, the Selection Committee will draw up a shortlist of candidates admitted to the interview in alphabetical order.

The **shortlist of applicants admitted to the interview and interviews schedule** will be published on the School's website and Online Notice Board ("*Albo Online*").

This is the only official communication of the preliminary results to all applicants.

Interview

During the comprehensive interview, the Selection Committee will assess the candidates' knowledge and skills with reference to the specific characteristics of the PhD Programme.

The Selection Committee will assess all interviews by assigning a score (up to 100 points): applicants scoring at least 70 out of 100 will be eligible for the Programme and, therefore, listed in the final ranking.

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Final ranking

At the end of the **interviews** (which will take place in the period **22 – 26 July 2026**), the Selection Committee will draft the final ranking of the eligible candidates for each track/PhD Programme according to their scores obtained in the interview.

In the event that additional subject-restricted positions become available after the opening of the present call for applications, the Selection Committee reserves to assign eligible candidates to the relevant rankings.

If multiple candidates get the same score, preference will be given to the youngest candidate.

In the event of the withdrawal or exclusion of a candidate, they shall be replaced by the next suitable candidate according to the ranking.

If the ranking of a track does not list enough eligible candidates to allocate all available positions, the remaining scholarships will be assigned according to the ranking of other eligible candidates of the other PhD Programme's track.

If the ranking of the PhD Programme does not list enough eligible candidates to allocate all available positions, the remaining scholarships will be assigned according to the ranking of other eligible candidates of other PhD Programmes.

All rankings will be published on the School's website and Online Notice Board ("*Albo Online*").

ENROLLMENT

Once admitted to the PhD Programme, candidates wishing to enroll must submit the complete enrollment form to the IMT School **no later than five (5) days from the publication of the results** on the School's Online Notice Board ("*Albo Online*") and website.

Failure to submit the enrollment request by the deadline and through the above-mentioned methods will result in an automatic withdrawal of the candidate from the Programme.

The enrollment request is valid only if all the requested documents have been enclosed.

If any of the documents submitted during the application procedure do not correspond to those submitted during enrollment due to an intentional false declaration, the applicant will automatically lose their right to enroll in the Programme.

Enrollment is effective on the first day of official classes. Unauthorized absences may nullify the enrollment procedure.

SCHOLARSHIPS

The scholarship amount is 16,243.00 Euros/year and shall be disbursed in monthly installments.

For any research or training activities at universities or research centers abroad, the scholarship amount is increased by 50% for up to 12 months. This period can be extended up to 18 months in case of co-tutored Programmes established with a foreign institution and/or in case of Programmes established in agreement with other institutions.

Scholarships are subject to the payment of social security contributions (INPS) managed separately under Article 2, paragraph 26 of Law no. 335 of August 8, 1995, as amended, with two-thirds paid by the Administration and one-third by the scholarship recipient.

Admitted candidates who have already benefited from a PhD scholarship in Italy cannot be assigned another one.

The scholarship has a maximum duration of three (3) years and is subject to annual confirmation: according to articles 15 and 16 of the IMT School PhD Regulations, students must complete all the activities provided for each academic year.

If a student withdraws or is excluded within 45 days from the beginning of the Programme, they are not entitled to the scholarship. The scholarship will be awarded to the next eligible candidate according to the final ranking. For this reason, the first scholarship payment will be made only after the successful completion of the first 45 days of the Programme.

If a student registers after 45 days from the beginning of the Programme, he/she is entitled to the scholarship starting from the actual date of enrollment.

FACILITIES

Residential facilities: accommodation

All PhD students who are granted a scholarship have free accommodation in shared double rooms with private bathrooms, priority being given to on-campus residential facilities, for the entire official duration of the Programme (3 years), except for periods spent off campus for study and/or research.

The School can revoke the right to accommodation if it is rarely or not used.

Residential facilities: canteen

All PhD students are offered free meals (lunch and dinner) at the School canteen located on campus for the entire official duration of the Programme (3 years). Lunch and dinner are served each day, Monday through Sunday, for the entire academic year, except for the closing periods.

Other facilities

All PhD students have access to library facilities and can benefit from the IT support services for all technical requests related to study and research until the thesis defense.

The School subscribes to an insurance policy for all PhD students. It provides coverage against accidents and injuries incurred by students in Lucca or abroad while performing academic activities. The IMT School also provides students with health insurance policies for research trips outside Europe (students are automatically covered in European countries).

All international PhD students are offered the possibility to take an Italian language and culture course.

TREATMENT OF PERSONAL DATA

The IMT School will use the personal data provided by applicants solely for selection procedures and institutional aims in accordance with the provisions of the current European and Italian legislation (EU Regulation 2016/679 and Italian D. Lgs. 196/03 - *Italian Privacy Code*, as modified by the D. Lgs. 101/2018) and the relevant School Regulations.

Applicants are granted all the rights established by art. 15, sections 2, 3, and 4 of Chapter III, and art. 77 of the EU Regulation 2016/679.

For further information regarding the call and the selection procedure, please contact the PhD and Higher Education Office by email at phdapplications@imtlucca.it or by phone at +39 0583 4326530.

Further information regarding the PhD Programmes and the IMT School is available at www.imtlucca.it.

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FINAL PROVISIONS

Relevant laws and the IMT School PhD Regulations shall be applied to any issue or item not covered by the present call for applications.

IMT SCUOLA ALTI STUDI LUCCA

Optimal and Formal Control of Non-Linear Uncertain Systems

Funded by:
The Italian Institute of Artificial Intelligence (AI4I), in collaboration with IMT

Supervisors:
Luca Laurenti

Contact:
luca.laurenti@ai4i.it

The Italian Institute of Artificial Intelligence (AI4I), in collaboration with IMT, invites applications for a PhD position focused on Optimal and Formal Control of non-linear uncertain systems.

Modern autonomous systems, such as autonomous vehicles or robotics systems, are commonly affected by various sources of uncertainty. These include both the uncertainty caused by the intrinsic randomness in the system dynamics and the uncertainty due to the use of statistical learning algorithms to estimate the unknown components/parameters of the system. Consequently, it is common that mathematical models are not only stochastic, but the distributions of the various random variables are themselves uncertain. As a result, when these models are used in safety-critical applications, the resulting uncertainty cannot be neglected and must be propagated through possibly non-linear functions.

The Role

The PhD candidate will develop methods at the intersection of uncertain abstractions, Markov decision processes, and Model Predictive Control (MPC) to design controllers that are both provably correct and scalable. There will also be opportunities to test and validate these methods on real-world benchmarks. The project will be carried out in collaboration with AI4I and TU Delft.

Key Objectives

- Develop scalable techniques for **control of non-linear uncertain systems** with formal guarantees of safety and performance.
- Apply techniques to real-world benchmarks to evaluate effectiveness and scalability.

Expected Impact and Dissemination

Scientific results will be targeted for publication in top conferences and journals, such as:

- **Conferences:** NeurIPS, ICML, CDC, UAI, AISTATS, IJCAI, AAAI
- **Journals:** IEEE Transactions on Automatic Control (TAC), Automatica

Required Qualifications

- Strong background in either control theory, theoretical computer science, or applied mathematics.
- Good programming skills and proficiency in programming languages.

- Strong analytical skills and an ability to work at the intersection of several research domains.
- Be fluent in English, both written and oral.

What We Offer

- Joint supervision between AI4I and IMT, with collaboration from TU Delft.
- Access to high-performance computing resources and advanced research infrastructure.
- Opportunities for international collaboration and contributions to high-impact publications.
- A dynamic and interdisciplinary research environment bridging control theory, AI, and formal methods.

IMT SCUOLA ALTI STUDI LUCCA

Safe Control via Generative AI

Funded by:
The Italian Institute of Artificial Intelligence (AI4I), in collaboration with IMT

Supervisors:
Luca Laurenti

Contact:
luca.laurenti@ai4i.it

The Italian Institute of Artificial Intelligence (AI4I), in collaboration with IMT, invites applications for a PhD position focused on Safe control via Generative AI.

Modern deep learning models have achieved state-of-the-art performance across various domains, including computer vision and natural language processing. They also hold great promise for controlling and verifying dynamical systems. However, modern machine learning models commonly lack safety and performance guarantees. Consequently, how to utilise these techniques to control autonomous systems with safety and performance guarantees remains an open question. The goal of this PhD project is to determine how to answer this question.

The Role

The PhD candidate will explore how state-of-the-art machine learning and generative AI techniques can be used to control dynamical systems while providing performance and safety guarantees. The goal of this PhD project will be to develop a novel control framework that relies on recent developments in machine learning and generative AI and combines them with existing control techniques, such as model predictive control, planning algorithms, or abstractions. Depending on the candidate's interests, the project will involve developing new algorithms at the intersection of machine learning, robotics, and control theory.

The research program will be conducted in collaboration with the Italian Institute of Artificial Intelligence for Industry (AI4I), the Delft Institute of Technology (TU Delft), and the University of Colorado Boulder (CU Boulder).

Key Objectives

- Develop a novel control framework combining generative AI and existing control techniques.
- Explore applications at the intersection of machine learning, robotics, and control theory.

Expected Impact and Dissemination

Scientific results are expected to be published in leading conferences and journals, such as:

- Conferences: NeurIPS, ICML, ICLR, CDC, UAI, AISTATS, IJCAI, AAAI
- Journals: IEEE Transactions on Automatic Control (TAC), Automatica

The project will contribute to safe and reliable AI-driven control methods for modern autonomous systems.

Required Qualifications

- Strong background in machine learning, deep learning, or applied mathematics.
- Good programming skills and proficiency in one or more programming languages (e.g., Python, MATLAB, C++).
- Strong analytical skills and ability to work across multiple research domains.
- Fluency in English (written and oral).

What We Offer

- Joint supervision by AI4I and IMT, with collaboration from TU Delft and CU Boulder.
- Access to AI4I's high-performance computing resources and research ecosystem.
- Opportunities for international collaboration and high-impact publications.
- A dynamic, interdisciplinary research environment bridging machine learning, generative AI, and control theory.