

## **Call for admission**

### **Master Program in**

### **Multifunctional Metamaterials and Metastructures (M3)**

### **I Edition**

### **Academic year 2024/2025**

English translation

*Disclaimer*

*The English version is a support for foreign candidates.*

*The only legally binding version of the call is the Italian one.*

### **Art. 1 – Call for admission**

1. The Department of Civil, Environmental and Mechanical Engineering and the Department of Industrial Engineering at the University of Trento announces a Call for admission, based on qualifications, in order to select students for admission to the Master in Multifunctional Metamaterials and Metastructures – M3 for the academic year 2024/2025, I edition.
2. Attendance is reserved to 30 positions (the Master will actually start with a minimum of 10 candidates). In case the candidates eligible will be less than 10, the Master will not take place.
3. The second-level Master's program in Multifunctional Metamaterials and Metastructures (M3) aims to provide cross-disciplinary theoretical, methodological and experimental knowledge and skills with regard to the definition, modeling and design of multifunctional metamaterials and metastructures.

### **Art. 2 – Training objectives and organization**

1. The main objective of the Master in Multifunctional Metamaterials and Metastructures (M3) is to train professionals with skills in analysis, design, analytical and computer modeling, simulation, and experimental validation in the field of multifunctional metamaterials and metastructures. Specifically, the Master's program will explore both theoretical and applied topics including:
  - the theoretical foundations of metamaterials and multifunctional metastructures in the various relevant disciplines according to the physical phenomena of application interest;
  - the techniques of analysis of artificial materials and methods for their functional and logical characterization in analytical and mathematical terms;
  - the techniques for large-scale numerical modeling of complex multifunctional structures, including consideration of their multiphysical properties, through the use of multi-scale techniques on advanced computing (HPC) architectures and the integration of hybrid approaches based on the use of artificial intelligence;
  - the fabrication, implementation, and experimental characterization in the laboratory from mechanical, electromagnetic, and structural perspectives of both static and reconfigurable multifunctional artificial materials by exploiting different physical mechanisms of reconfiguration;

- cross-cutting applications concerning multiple relevant scenarios, including the study of multifunctional metamaterials and metastructures in the following fields:
    - mechanical (e.g., materials with negative refractive capabilities; bio-inspired mechanical metamaterials; materials with "cloaking" capabilities)
    - structural (e.g., materials with vibration mitigation capabilities and metamaterials operating at ultra-low frequencies; materials with integrated structural and sensing capabilities)
    - electromagnetic (e.g., electromagnetic metamaterials for communication, energy transmission, and sensing applications, including considering the next-generation Smart Electromagnetic Environment paradigm);
    - energy (e.g., artificial materials for energy storage and energy harvesting);
    - environmental and marine (e.g., use of metamaterials with advanced sea wave scattering capabilities for coastal erosion reduction).
2. The Master has a duration of 12 months, from January 2025 to December 2025. The medium of instruction is English language.
  3. Attendance to the lessons of the Master is compulsory for all the subjects for a minimum of 70% of the front or remote teaching.
  4. The Master study plan provides 60 university credits, as following:

Tipologia di attività	Durata in ore	Cfu
Frontal teaching	210	42
Personal home work and study	808	
Seminars	32	0
Laboratories	75	10
Individual study, laboratories including self-assessment sessions	175	
Internship	150	6
Final project	50	2
<b>Totale</b>	<b>1500</b>	<b>60</b>

5. Lessons will be taken at the Department of Civil, Environmental and Mechanical Engineering and at the Department of Industrial Engineering. Teaching activities will take place at the Department of Civil, Environmental and Mechanical Engineering and the Department of Industrial Engineering.
6. Teaching activities will take place both in-person and online in synchronous and asynchronous modes.

### Art. 3 – Requirements and application

1. Those in possession of one of the following qualifications can apply for participation at the Master in Multifunctional Metamaterials and Metastructures:
  - a) Old system degree;
  - b) Master's or single-cycle master's degree;
  - c) Foreign qualification (Master degree), recognized as suitable according to current legislation.
2. Undergraduates who intend to achieve the qualification referred to in paragraph 1 above by the date of the ranking publication may also apply to participate in the Master. In case of successful completion of the selection, undergraduates who confirm their enrollment will be admitted to participate in the Master "with reserve" until they obtain the title, which has to be obtained by the date of the ranking publication anyway. Once they have obtained the qualification, they must promptly notify it by writing an email to [masters@unitn.it](mailto:masters@unitn.it) for definitive registration and payment of the required fee. Failure to obtain the title by the above deadline will result in the forfeiture of the merit ranking.
3. Enrollment in the Master's program is compatible with the enrollment in another course of study, if the two courses meet the compatibility requirements established by the MUR (M.D. 930/2022 Articles 2 and 3).
4. Access to the Master's program is reserved for those who submit an application to the University of Trento, through a special online procedure, which will collect all the data necessary for proper evaluation of individual applications; access to the online application will be tied to the use of credentials derived from a digital identity (SPID/CIE). Applications for the Master must be submitted exclusively online **starting from September 2nd 2024 to January 6<sup>th</sup>, 2025 12:00 o'clock** by accessing the address on the dedicated page <https://www.unitn.it/en/ateneo/1897/masters>



5. The online application must be attached in pdf format:
  - a) curriculum vitae et studiorum (including a list of publications, if any);
  - b) English certificate (at least B2 level);
  - c) Motivational letter;
  - d) Self-certification of the degree qualification with exams (completed with date and grade).
6. Applications submitted in different manner or timing than indicated above will not be considered.

#### **Art. 4 – Commissione, selezione e graduatoria**

1. The Admissions Committee, which will make the selection, will be appointed by Rector's Decree on the recommendation of the Master's Board of Directors.
2. The ranking will be defined on the basis of the following criteria:

Curriculum Vitae et Studiorum	Max 80/100
Motivational letter	Max 20/100

3. In case of candidates with the same score, priority will be given to the candidate with the highest score in the examination of the CV and in the interview. Dates of any interviews will be communicated via email to interested candidates **by January 10th, 2025**. The list of candidates who, having obtained the minimum score of 60/100, will be eligible in the merit ranking will be published on the dedicated page at the following link <https://www.unitn.it/en/ateneo/1897/masters> **by January 17th 2025**.
4. For candidates who have not yet obtained the qualification, the provisions of Article 3, paragraph 2 of this announcement apply.

#### **Art. 5 – Enrolment and scholarship**

7. In order to confirm their position, the admitted candidates must take enrolment at the Master **by 23:59 of January 21st, 2025**, and pay the first tuition fee of € 2.000,00 following the instructions that will be sent by e-mail.
8. The second fee of €1.000,00 will be due **by 30th June 2025**.
9. Any scholarships will be proposed depending on the presence of sponsors.

10. The tuition fees will not be reimbursed in case of withdraw of the candidate.

### **Art. 6 – Exams and final project work**

1. The assessment will be carried out by written or oral exam and with an evaluation expressed in "approved" or "not approved".
2. The project work (final exam) consists in the drafting of a project developed under the supervision of a professor/expert, discussed in front of a special commission, composed of at least 3 professors, appointed by the Board of Directors of the Master.
3. Students who have regularly participated in the activities of the Master (minimum 70% of the hours of frontal or remote teaching) and who have successfully passed the assessment tests of teaching and the final exam, will be released, in the specific session for conferring the title in December 2025, a second level University Master's Degree in "Multifunctional Metamaterials and Metastructures".
4. Students who have not reached the minimum attendance required (70% of the hours of frontal or remote teaching) and / or who have not passed the verification tests required for the acquisition of the number of credits necessary for the attainment of the degree may issued only a certificate showing the attendance actually acquired, the list of didactic activities in which the student may have participated and the results of any tests passed.

### **Art. 7 – Data protection**

1. Personal data will be processed according to the GDPR (UE 2016/679).

### **Art. 8 – Further information and deadlines summary**

1. Further information about master course are available on the dedicated page at the following link <https://www.unitn.it/en/ateneo/1897/masters>.



Deadlines	
Submission of application	From September 2nd 2024 to January 6th 2025, 12:00 o'clock
Ranking publication	By 17th January 2025
Enrollment and payment of I fee	By 21st January 2025, 23:59
Begin of lessons	January 2025
Delivery of the project work	By November 2025
End of Master	By December 2025

Per il Rettore  
Il Responsabile della  
Direzione Didattica e Servizi agli Studenti  
f.to dott. Paolo Zanei