



UNIVERSITY
OF TRENTO - Italy

Call for Doctoral positions at the
PhD Programme in
Materials, Mechatronics and Systems Engineering
34th Cycle – Second call
Departments of Excellence (Italian Law no. 232/2016)

ACADEMIC YEAR 2018/2019

N.B. Please note that only the Italian version of the present call issued by Rector's Decree no. 457 of 13.06.2018 is legally binding; the English version is provided for information only

Art. 1 – SUBJECT OF THE CALL

The University of Trento opens the call for position for the 34th Cycle (Academic Year 2018/2019) of the Phd Programme in “Materials, Mechatronics and Systems Engineering”.

The positions in this second call are related to the appropriate funds allocated within the Departments of Excellence (Italian Law 232/2016), for which the Department of Industrial Engineering of the University of Trento was a beneficiary for the development of the project approved. All positions are on a specific topic (as reported below), and are therefore conditional on execution of that specific research topic for which certain skills, to be verified on the selection webpage, are required.

The registrations for the present second call (Departments of Excellence) will also be accepted by the participants to the first call (published on 28.05.2018), but those who will be winners both in the selection of the first call and in that of the second, will be automatically removed from the first ranking/s constituting the winnings on the second call considered the first choice for the candidate and therefore binding.

Positions: no. 12

Research Fellowships (*Assegni di ricerca*): no. 12

	Research topics¹
A	Variable impedance actuators based on composite elastomers for advanced robotics
B	One step bioprinting of complex hierarchical biological tissues: intervertebral disc
C	Measurement of physio-mechanical parameters for regenerative vertebral prosthesis and human posture optimization
D	High-performance photodetectors based on engineered 2D transition metal dichalcogenides layers
E	Maintenance policy optimization in the Industry 4.0 paradigm
F	Optical Flexible Biocompatible Sensors - OPTIFLEBS
G	Polymer-derived ceramics cellular structures from replica of 3D printed lattices for bone tissue applications
H	Production of bioceramic components by P-3DP (Powder-based 3D printing) starting from powders synthesized from natural products
I	Flexible multifunctional sensors for soft robotics
J	Design and development of an exoskeleton with rehabilitative functions for diseases of the spine
K	Modeling and simulation of vehicle emissions for the reduction of road traffic pollution
L	Liquid-based electro active polymers (LEAP) for a new class of soft actuators and generators

Deadline for application	August 27, 2017, hrs. 04.00 PM (Italian time, GMT +2)
Duration	three years
Start of the Academic Year	November 1, 2018
Selection website	https://www.unitn.it/en/ateneo/71250/announcement-of-selection
PhD School website	http://www.unitn.it/drmmse/ (information on the programme, admission to subsequent years and to final examination)
Rights and duties of doctoral students	http://www.unitn.it/en/ateneo/52919/rights-and-duties-of-doctoral-students

¹ Reserved fellowships can only be assigned to those candidates who will ask for and obtain the specific eligibility.

Doctoral fellowships	https://www.unitn.it/en/ateneo/71250/announcement-of-selection and Annex B
Official language	English
Scientific areas (with reference to the Italian Ministerial classification)	https://www.unitn.it/en/ateneo/1904/doctoral-programme-in-materials-mechatronics-and-systems-engineering

N.B.

- a. The dates of the selection and all selection results (interim and final), the possible exclusion from the selection for incomplete application (art. 3), the exclusion for foreign qualification not recognized as suitable (art. 2 c.3), and any general advices will be published only on the selection webpage; the candidates will be identified through the application ID. The publication on the website is to all intents and purposes valid as official notification.
- b. Without exception, all possible communication from the University of Trento to applicants will be managed via e-mail to the email address specified in the application online. Candidates are advised to check their mail box regularly and keep the Doctorate Office S&T (phd.office-st@unitn.it) promptly informed of any change of their email account.

Art. 2 – ADMISSION REQUIREMENTS

1. Applications for doctoral positions are accepted from applicants, regardless of gender, age and nationality, who hold:
 - a. an Italian “Laurea Magistrale”, according to the Ministerial Decree no. 270 of 22.10.2004 and subsequent amendments, or
 - b. an equivalent Italian university degree (previous regulations in force, “specialistica”, AFAM), or
 - c. an equivalent foreign degree (*Master’s degree*) obtained at an officially acknowledged academic institution, valid for admission to PhD studies in the Country of issue (except for substantial differences) and similar (duration and level) to the Italian degree, recognized as equivalent by the Admissions Committee for the sole purpose of access to the present Phd Programme².
2. Applications are also accepted from students expecting to obtain the necessary degree **by October 31, 2018**. Admission to the Doctoral Programme for successful applicants who have not yet graduated will be “conditional” and the applicant will have to submit to the Doctorate Office S&T (via email to: phd.office-st@unitn.it) **by November 6, 2018**, on penalty of exclusion, awarding certificate or a self-declaration (by using Annex A).
3. Applicants with a foreign qualification that has not been officially recognised as equivalent³ to an Italian degree (*Laurea Magistrale/Specialistica/vecchio ordinamento*) will be considered as requesting equivalence in their application, attaching the necessary supporting documents. The eligibility of foreign academic degrees is assessed by the Admissions Committee, following the rules in force or the international treaties on recognition of academic qualifications. The Admissions Committee may require the applicant to provide additional documentation if deemed necessary for the purpose of assessing the suitability.

Art. 3 – APPLICATION PROCEDURE

1. The application⁴ must be **completed and submitted by hrs. 04.00 PM Italian time (GMT +2) of August 27, 2018, solely by the online system:** <http://www.unitn.it/en/apply/dott>. Applicants who do not have an account at the University of Trento must register in advance at⁵: <http://www.unitn.it/account>.
2. The application is subject to the payment of an application fee - non-refundable - amounting to € 15 to be paid by credit card according to the instructions given in the appropriate section of the online

² Details at: <http://www.cimea.it/en/servizi/il-sistema-italiano-di-istruzione-superiore/qualifiche-del-sistema-universitario.aspx>.

³ For further information see at <http://www.cimea.it/en/servizi/procedure-di-riconoscimento-dei-titoli/procedure-di-riconoscimento-accademico-dei-titoli.aspx>

⁴ The candidate can choose either Italian or English to fill in the application online.

⁵ Candidates are advised to register well in advance of the deadline as the issue of the username and password (sent via email), necessary to enter UNITN’s online services, may require up to 2 working days.

application. The application online can be saved and modified several times until the submission. Afterwards it can no longer be changed.

3. It is the sole responsibility of the applicant to verify and submit with correct closure the online application (ensuring reception of the email notification). The University refuses any liability for all applications not properly submitted by candidates. The online application is considered to be a self-declaration of personal data and qualifications with full legal effect.

4. MANDATORY ATTACHMENTS (failure to upload one or more mandatory attachments results in automatic exclusion from the selection)

1) Identifying document (ID):

- a copy of the applicant's valid **identity card** (only EU citizens) or **passport** (extra EU applicants), in particular of the pages reporting his/her photograph, personal data, number, place and date of issue, expiry date and signature.

2) Academic degree for admission to PhD:

• Italian qualification:

already obtained: a self-declaration, in accordance with Presidential Decree art. 46 no. 445 of 28.12.2000 and subsequent amendments, declaring the possession of a degree (art.2 of this Call), "*Classe di Laurea*", award date, issuing University, final grade, examinations taken, grades and credits obtained (by using Annex A); graduates from the University of Trento may only declare the place and the date of award as the other information can be collected ex officio;

to be obtained: a self-declaration, in accordance with Presidential Decree art. 46 no. 445 of 28.12.2000 and subsequent amendments, declaring the possible award date, issuing University, "*Classe di Laurea*", examinations taken, grades and credits obtained (by using Annex A); future graduate of the University of Trento may only declare the place and the foreseen date of award as the other information can be collected ex officio;

• foreign qualification⁶:

already obtained: copy of the academic certificate accompanied by a list of exams with their credits and grades and, if available, the Diploma Supplement⁷ / transcript of records or Declaration of value⁸ or Rector's Decree of equivalence⁹;

to be obtained:

- a certificate of enrolment with a list of the examinations successfully passed and marks and credits obtained in each examination; if this document is not in English, the applicant must provide, in the same file, a translation of the same duly undersigned;
- a statement declaring that the student will complete his/her degree by October 31, 2018.

N.B.: if the university studies carried out abroad are divided into first and second level, the Bachelor's degree and the list of exams taken for the achievement of the relative degree (academic transcript of records of Bachelor's) should also be attached.

- 3) **curriculum vitae et studiorum (in Italian or English)**, preferably using the Europass format: <http://europass.cedefop.europa.eu/en/documents/curriculum-vitae> ;

- 4) **summary of the Master's thesis in English** explaining the reasons for the choice of the subject, the research methodology and the results obtained (max. 4 pages);

- 5) **statement of purpose in English (maximum 3000 characters, including spaces)**, motivating the applicant's research interest in one of the Phd Programme's research field.

- 6) **a description of the research project/s:** the research proposal (in English, written on the form available in the application online) referred to one or more (maximum 3) topics listed in art. 1; applicants can express their preference but it is not binding. Please note that the description of the

⁶ It is in the interest of the applicant to provide all information relevant for the assessment, especially if the country where the qualification was obtained has an education system not comparable to the Italian one.

⁷ The Diploma Supplement accompanies a higher education diploma, providing an improvement in international "transparency" and promotion of the academic and professional qualifications obtained (diploma, degrees, certificates, etc.). The Diploma Supplement must be issued by the same institution that issued the qualification. Further information at <http://www.cimea.it/en/servizi/il-sistema-italiano-di-istruzione-superiore/diploma-supplement.aspx> and http://ec.europa.eu/education/resources/diploma-supplement_en

⁸ Further information about DoV and equivalence: <http://www.cimea.it/en/servizi/procedure-di-riconoscimento-dei-titoli/glossario.aspx>

⁹ Delivery of the Diploma Supplement, Declaration of value or decree of equivalence, optional at the application stage, will be mandatory for the winners at the time of actual enrolment.

project proposed by the applicant is in no way binding for the research that will be carried out in case of admission, while the chosen research topic assigned by the Admissions Committee will be mandatory.

5. OPTIONAL ATTACHMENTS:

- Bachelor's degree and related Transcript of records
 - list of research outputs;
 - any certificates attesting the knowledge of foreign languages;
 - any other documents useful to assess the research skills of the applicant (prizes, scholarships, post-graduate research and work activity, etc.).
6. The University will accept any additional documents to the submitted application if sent by email to ateneo@unitn.it (**Subject:** "Application ID - Applicant's Surname and Name – PhD Programme in Materials, Mechatronics and Systems Engineering – 34th Cycle, Second call - Supplement to application") **by August 27, 2018, hrs. 04.00 PM (GMT +2) Italian time.** Additional documents submitted by different means will be disregarded.
7. Only documents (originals or copies) in English, Italian, French and Spanish will be taken into consideration for the selection by the Admissions Committee; for all other languages it is compulsory to attach a translation into English signed by the candidate. The attachments required at previous points 4.4, 4.5 and 4.6 must be submitted in English by all applicants.
8. All applicants are admitted to the selection procedure conditionally upon ascertainment that they fulfill the admission requirements. The University of Trento has the right to verify the documents delivered pursuant to articles 71 et seq. of the Presidential Decree no. 445 of 28.12.2000. The University can at any time, even after enrolment and upon justified reasons, decide the exclusion of candidates lacking the requirements specified in the present call.

Art. 4 – EVALUATION OF APPLICATIONS

1. The evaluations is made by an Admissions Committee for access to the PhD Programme appointed by the Rector upon advice of the PhD Programme Committee, in accordance with the University doctoral regulations. The Committee sets the evaluation criteria during the preliminary meeting.
2. The selection procedure is designed to ensure, comparatively, the knowledge and aptitude of the candidates to carry out research in areas related to the PhD programme and the chosen Research area/s. The selection is made on the basis of the assessment of:
- the applicant's qualifications according to previous art. 3
 - an interview. The oral examination is designed to assess the candidate's basic knowledge about the Doctorate scientific areas, specifically to that referred to in the research project/s (maximum 3), to discuss past research and professional experience, and qualifications declared. The level of knowledge of English will also be assessed. In order to be allowed to oral examination the candidate must provide a valid ID/passport with photo.
Applicants residing or domiciled abroad, or otherwise unable to proven reasons to take the interview in person, may be authorized – upon request – to conduct the oral examination in another seat by video-conference. The Committee will guarantee that all the regularity requirements are fulfilled during the examination (verifying the candidate's identity and the accuracy of the interview).
- N.B.!** The choice made by the candidate to compete for the reserved fellowship/s implies a preference on his/her part for the allocation of that specific fellowships/s with respect to the others even if available in the first call.
3. The Admissions Committee may assign each candidate 120 points as follows:
60 points: assessment of qualifications
60 points: interview.
4. Candidates obtaining a minimum score of 36/60 for the assessment of qualifications will be admitted to the oral examination. The interview is successfully passed with a minimum score of 36/60. Applicants obtaining an overall score of 72/120 will be short-listed.

5. At least 20 days before the date of the examinations, time and location of the examinations will be published on the selection website.

Art. 5 – RANKING

1. At the end of the selection procedure the Admissions Committee draws up one final ranking.
2. Research fellowships are assigned to short-listed applicants following:
 - a) the position in the ranking;
 - b) the eligibility of the applicant for that specific fellowship/research topic.Please note that reserved fellowships are assigned at the discretion of the Admissions Committee and, where possible, according to the preference expressed by the applicant in the online application (art. 3 point 4.6).
3. The non-allocation of scholarships on reserved topics concerning point b) will result in the reduction of the available positions.

Art. 6 – ADMISSION TO THE DOCTORAL PROGRAMME AND ENROLMENT

1. Short-listed applicants are admitted to the PhD Programme according to their place in the final rankings until all available places in each Research area have been filled. The applicant who has been awarded a fellowship on a specific reserved topic must accept it. Renunciation of the reserved fellowship implies the exclusion of the applicant from the right to enrol. Candidates who will be winners both in the first and in the second call will be automatically removed from the ranking of the first, since the winnings on the second call will be considered as first choice for the candidate and therefore binding.
 2. Admitted applicants must send the enrolment following instructions at <http://www.unitn.it/en/ateneo/1928/enrollment-1-2-3-year>:
 - **within 8 days** starting from the next day of the publication of the final rankings on the Selections website for **positions with scholarships**;
- N.B.!** Admitted applicants with a foreign qualification must deliver the Diploma Supplement (qualifications obtained in countries of the European Research Area) or the Declaration of Value together with the copy of the final Diploma with a complete transcript of records, translated and authenticated by the Italian diplomatic representatives in the country of issue; the Declaration of Value may be replaced by a certificate issued by ENIC-NARIC¹⁰ centers containing all the information necessary for the assessment of the qualification. If these documents are not available at the time of the acceptance of the position, they must be delivered **by November 6, 2018**. Their non-delivery may result in exclusion from the Doctorate.
3. The enrolment must include the payment of stamp duty and, where applicable, the payment of the "provincial tax for the right to higher education" - TDS¹¹. To date there are no fees charged to doctoral students to access courses and the frequency thereof, with the exception of the aforementioned annual provincial tax for the right to study (TDS).
 4. Admitted applicants **who do not enrol within the above mentioned deadline** will lose their right to enrol and their places will be offered to the next applicants on the ranking with the eligibility for the same research topic.
 5. If a successful applicant withdraws before the beginning of the course (November 1, 2018), the next applicant on the reference ranking will be offered the place. The latter must submit his/her enrolment **within 4 days** starting from the day after the day in which the communication from the Doctorate Office S&T is sent.
 6. If a successful applicant withdraws or is excluded after the beginning of the courses and during the first quarter of the first year (three months), the PhD Programme Committee may decide to fill the vacancy with the next applicant on the reference list.

¹⁰ <http://www.enic-naric.net/>

¹¹ Please note that the total amount of TDS + duty stamp must be paid only by credit card following the instruction. Page <http://www.unitn.it/en/ateneo/1931/education-tax-tds-and-revenue-stamp> provides information on exemption form TDS.

Art. 7 – INTELLECTUAL PROPERTY RIGHTS ON RESEARCH RESULTS AND PUBLICATIONS

1. Without prejudice to the moral right recognized by the law to the author of the work or invention, the University will be the exclusive owner of the economic rights deriving from the activity carried out by the researcher (*assegnista di ricerca*) in execution of the doctoral research project and the related thesis or other research production.

Art. 8 – PERSONAL DATA

1. Pursuant to art. 13 of EU Regulation 2016/679 "General Data Protection Regulation (GDPR)", the University will process personal data within the scope of its institutional purposes exclusively for the performance of the present selection procedure (Article 6, paragraph 1, letter e) of the GDPR).
2. The Data Controller is the University of Trento, via Calepina n. 14, 38122 Trento, email: ateneo@pec.unitn.it; ateneo@unitn.it. The contact details of the data protection officer are: Fiorenzo Tomaselli, via Verdi n. 8, 38122 Trento, email: rpd@unitn.it
3. The processing of personal data will be carried out by paper and / or computerized means only by personnel authorized to process the data in relation to the tasks assigned and in compliance with the principles of lawfulness, fairness, transparency, adequacy, relevance and necessity. The data may be communicated to the Ministry of Education, University and Research (MIUR), to the National Agency for the Evaluation of the University System and Research (ANVUR) and to any other public and private entities in execution of legal obligations as well as to any external financiers of the scholarships and/or fellowships in compliance with the related contractual obligations.
4. The data collected will not be transferred to non-EU countries.
5. The provision of personal data is essential for the present procedure and failure to provide it precludes participation in the procedure itself. The data will be kept for the period necessary for carrying out the procedure and for the fulfillment of all legal obligations. At any time the rights referred to in articles 15 and following of the GDPR and, in particular, access to personal data, rectification, integration, erasure, restriction and the right to object to the processing. This is without prejudice to the right to lodge a complaint with the supervisory authority for the protection of personal data pursuant to art. 77 of the GDPR.

Art. 9 – REFERRAL RULES

1. For matters not explicitly mentioned in the present call, refer to Law no. 398 of 30.11.1989, art. 4 of Law no. 210 of 3.07.1998 as amended by art.19, par. 1, of the Law no. 240 of 30.12.2010, to Ministerial Decree no. 45 of 08.02.2013 and to the University Regulations for Doctoral Programmes issued by Rector's Decree no. 742 of 28.10.2016, to the Code of Ethics of the University of Trento, to the Internal Regulations in force of the Doctoral Programme in Materials, Mechatronics and Systems Engineering, and to the other relevant provisions contained in the current legislation.
2. This call, accompanied by its translation into English, is published on the University website, on the website of the Italian Ministry of Education and on Euraxess. Any changes or additions to the call will be made available only on the selection website specified in art. 1.

On behalf of
The Rector

The Head of Education and
Student Services
Dott. Paolo Zanei

ANNEX A

Declaration substituting
DEGREE CERTIFICATE¹

(Article 46 - letters l, m, n - D.P.R. 28 December 2000, No. 445)

The undersigned _____

place of birth (*city+country*) _____ date of birth _____

official address (*street, number, zip code, city, country*) _____

Mob. _____ e – mail _____

aware of the penal sanctions pursuant to Article 76 of the Italian Presidential Decree no. 445 of 28.12.2000 for falsifying documents and making mendacious declarations

DECLARES

A) TO HAVE GRADUATED (degree for admission to PhD, click the corresponding box):

Type of degree Laurea magistrale/specialistica
 Italian University degree of the previous regulations in force (*vecchio ordinamento*)

in: _____

Specialization (*Classe di laurea* ID code): _____

on __dd__ / __mm__ / __yy__ from University of² _____

(town _____ - Italy) with mark _____ out of _____

AND TO HAVE PASSED THE FOLLOWING EXAMS (fill out the following Section C)

Alternately:

B) TO HAVE NOT YET GRADUATED and to be aware that admission to the Doctoral Programme is conditional upon submission of the degree diploma/certificate by the date cited in the announcement.

Graduating in: _____

Specialization (*Classe di laurea* ID code): _____

University of: _____ in Italy.

Expected graduation date: _____

AND TO HAVE PASSED THE FOLLOWING EXAMS (fill out the following section C)

¹ **To be noted:** self-declarations can be delivered only if concerning facts and information which can be verified by an Italian public administration.

In case of non-European citizens this is possible only if they are in possession of a valid stay permit, which must be attached to the declaration.

- The self-declaration shall provide all the information required, and data related to the mark, date and place of obtainment of the degree are mandatory;

- The self-declaration shall be duly signed and dated.

² Graduates of the University of Trento must only declare the date of awarding of the degree; other information will be collected automatically.

PhD in Materials, Mechatronics and Systems Engineering – Cycle 34
Second Call 2018

Departments of Excellence

Research fellowship (Assegno di ricerca) description

1. Amount and payment of research fellowships

The annual gross amount of the research fellowship is € 21.800,00, including social security contributions to be paid by the recipient. The fellowship is subject to the payment of the INPS social security contributions “*gestione separata*” in the amount of two thirds payable by the University of Trento and a third to be paid by the research fellow; the fellowship is not subject to IRPEF. In general, the economic treatment of the research fellowship does not provide for increases that are instead attributable to doctoral students with scholarships in the case of stays abroad for research activity related to the doctorate: in view of this, the afore mentioned amount for the fellowship assigned in this announcement is above the ministerial minimum in order to include economic support for research stays abroad.* The research fellowship is compatible with scholarships expressly intended to support study and research periods abroad (e.g. Erasmus). The fellowship has a duration of three years and is paid in deferred monthly installments on condition that the PhD student completes the program of activities verified by the supervisor.

*During the doctorate, all fellowship holders will have to spend a period of research abroad of not less than 12 months, even if not continuous, unless explicitly waived by the Doctoral Committee.

2. Budget for research activity

The research fellow will have the possibility to use a research budget, on a par with the other doctoral students, corresponding to the total amount of € 3,258 divided as follows: € 1,000 for the first and second year, € 1,258 for the third year. Details on the specific use of the budget must be asked directly to the secretariat of the PhD programme. In any case each expense must always be previously authorized.

3. Working contract

The assignee is required to sign a specific working contract pursuant to Law 240/2010, art. 22.

N.B.! Non-EU citizens (Extra-EU) must have a scientific research visa, for which they will receive support from the [University Reception Office](#).

4. Intellectual Property Rights

Without prejudice to the moral right recognized by the law to the author of the work or invention, the University will be the exclusive owner of the economic rights deriving from the activity carried out by the research fellow (*assegnista di ricerca*) in execution of the doctoral research project and the related thesis or other research production.

5. Specific obligations of the training programme

- Doctoral research carried out in this project will be co-supervised with foreign partners of international prestige;
- during the course of study the student must spend at least one year abroad;
- in addition to addressing a specific research topic in the context of "Industry 4.0", students will dedicate at least one semester in training courses on advanced topics related to their research topic and transversal skills, such as entrepreneurship and management of projects;
- to access the final examination of the doctorate, students must have submitted at least two articles in international journals (one of which may still be under review) and have participated in the drafting of at least one international research project proposal.