Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

unibz

Public Competition
for the admission to the PhD programmes
41st cycle
Academic year 2025/2026
Faculty of Engineering
PhD Programme in
Adavanced-Systems Engineering

Website: PhD in Advanced-Systems Engineering / Free University of Bozen-Bolzano

Duration: 3 years

Academic year: 2025/2026

Start date: November 1st, 2025

Official language: English

Art. 1 - POSITIONS

1. A total of **8** positions are available for the PhD programme in Advanced-Systems Engineering.

2. All information about the PhD programme in general, the schedule and its structure as well as the possible research projects listed below can be found at the following link: PhD in Advanced-Systems Engineering / Free University of Bozen-Bolzano

3. **Positions with unibz scholarship: 4**

   Positions without scholarship: 2

   Positions tied to subject-related scholarship: 2

   Fondazione Bruno Kessler (FBK): 1

   "Advanced Electonic Readout Solutions for Sensing Applications"

   Eurac Research: 1

   "High-Precision IoT Instrument for Electroantennography in Experimental Entomology: Detecting Volatiles Perceived by Insect Antennal Olfactory Systems"

4. The following list of research projects and related supervisors and linked to positions financed with a unibz scholarship or without a scholarship is listed for illustrative purposes only, as other topics inherent to the activities of the various research groups at the university may be the subject of study.

Project Title	Supervisor
Development of a smart system to support the provision of sources of inspiration in engineering design tasks	Prof. Yuri Borgianni
Design of a platform to share and edit 3D models for inspection, physical and virtual prototyping	Prof. Yuri Borgianni
Bio-compatible and/or biodegradable (opto)electronics and/or batteries	Prof. Franco Cacialli
Engineering Biomaterials for Light-active Biohybrid Interfaces	Prof. Franco Cacialli
High and Low Cycle Fatigue Characterization of Advanced Engineering Materials: Finite Element Analysis and Experiments	Prof. Franco Concli
Tribology of Gears and Bearings: testing, modelling and simulations	Prof. Franco Concli
Mixed Reality to support Training in Industry	Prof. Patrick Dallasega
Design of anthropocentric collaborative robotic applications for product assembly	Prof. Patrick Dallasega
The Future of Immersion: AI in Real-Time Adaptive VR Simulators	Prof. Michael Haller
Dashboard Renaissance: Designing Next-Gen Interactive Experiences for Future Mobility	Prof. Michael Haller
Design and simulation of advanced semiconductor devices	Prof. Paolo Lugli
Fabrication, testing and characterization of sensors	Prof. Paolo Lugli
The extended theory of Aharonov-Bohm for electrodynamics and quantum mechanics, and its applications, in particular to omopolar Faraday generators with tunnel-effect contacts	Prof. Giovanni Modanese
Theory and applications of the Lindblad master equation for open quantum systems, with special focus on systems of qubits in quantum computing and quantum optics	Prof. Giovanni Modanese
Environmentally friendly thin-film electronics based on natural materials	Prof. Niko Münzenrieder
Integration of soft electronics into everyday objects, textiles, and artificial skins	Prof. Niko Münzenrieder
AI engineering for distributed dependable software systems	Prof. Claus Pahl
Intelligent resource management for IoT edge and cloud computing	Prof. Claus Pahl
Brain and body computer interface controlled systems and robots	Prof. Angelika Peer
Context-aware human-robot collaboration	Prof. Angelika Peer
Organic Neuromorphic Devices for Brain-Inspired Computing	Prof. Luisa Petti
Sustainable Printed Sensors for Smart and Digital Agrifood Systems	Prof. Luisa Petti
Leveraging AI to develop and maintain Malware Information Sharing Platform	Prof. Barbara Russo
Software Security. Leverign Large language Models to detect vulnerabilities, generate software artefacts for security, classify software weaknesses	Prof. Barbara Russo

Multi-body systems modelling and optimization towards digital twin solutions	Prof. Renato Vidoni
Development of safe and optimal motion planning algorithms for Industrial Collaborative Robotics solutions	Prof. Renato Vidoni
Nonlinear control of quadrupedal robots (the AnyMal)	Prof. Karl von Ellenrieder
Safety critical control for vehicle platooning	Prof. Karl von Ellenrieder

5. The application for admission must state the preference for the position with a subject-related scholarship and/or for a maximum of 3 research projects. The preference expressed will be indicative of the interests of the applicant and not binding for the selection committee.

6. Separate rankings will be compiled for positions tied to subject-related scholarship. The positions tied to subject-related scholarships oblige the winners to carry out research activities relevant to the indicated subject. These will be assigned preferentially to applicants who make a specific request in their application.

7. Pursuant to the general part of the present call for applications, the number of positions may be increased as a result of funding provided by other universities, public research bodies or qualified private companies. Notice of such an increase will be given exclusively on the Unibz web page dedicated to PhD programmes. Applicants wishing to obtain eligibility for any additional subject-related scholarships may make an explicit request to the selection committee during the interview, in order to allow it to assess the specific eligibility.

Art. 2 – ADMISSION REQUIREMENTS

1. Application to the present public competition for the admission at the PhD programme in Advanced-Systems Engineering may be presented pursuant to art. 4 of the general part of the present call for application, without limitations regarding gender, age or citizenship, by:

a) Applicants holding a postgraduate degree as per Ministerial Decree no. 509/1999, a postgraduate degree as per Ministerial Decree no. 270/2004, a degree of the former Italian university system of the following degree classes:

Degrees from the former Italian university system: all

b) Master's degrees of the new system (laurea specialistica/magistrale): all Applicants holding an equivalent degree obtained abroad;

c) Applicants achieving one of the above-mentioned titles within the enrolment deadline. In the latter case, applicants will be conditionally admitted to the public competition and are **required to present the qualification by the enrolment deadline, under penalty of forfeiting admission to the programme.**

2. Language requirements: An appropriate knowledge of English is required, which will be assessed during the interview.

Art. 3 – APPLICATION FOR ADMISSION

1. In addition to the documentation listed in the general part of the present call for applications, the following documents must be uploaded to the application portal:

a) Motivational letter in English (maximum 2 pages), in which applicants must indicate their preference for research projects (maximum 3) and/or for a position with a topic-related fellowship,

briefly justifying their choice. They may also mention why they consider unibz and this PhD course suitable for their training and research activities.

b) Updated curriculum vitae in English pursuant to the European format (downloadable at the following link: https://europass.cedefop.europa.eu/en/documents/curriculum-vitae) eventually including a list of publication indicating the Digital Object Identifier (DOI);

d) up to a maximum of 2 letters of reference, in English and in digital format, written by university professors or researchers of research institutes, indicating names and institutional contacts.

Art. 4 – SELECTION PROCEDURE

1. The selection procedure consists of three phases:

a) applications will be examined ex officio for completeness and fulfilment of the formal requirements; applicants excluded due to incomplete applications or lack of requirements will be notified on the dedicated unibz web page. The publication will have the nature of a notification to all effects. No individual communications will be made.

b) The selection committee will assess the complete applications in accordance with Article 5, considering the qualifications and attached documentation referred to in Article 3. Applicants who reach the minimum score referred to in Article 5 will be admitted to the interview. Admission to the interview, as well as the relevant dates and times, will be communicated on the unibz dedicated web page. Individual communications will be sent in due time to the e-mail address indicated in the application form to applicants admitted to the interview.

c) Interviews will be held by videoconference, at the applicant's request to the selection committee and will be evaluated in accordance with the criteria set out in article 5. Applicants must ensure the use of a webcam to enable them to identify themselves to the selection committee by showing a valid identity document or passport, under penalty of exclusion from the public competition.

2. Absence from the tests and/or interviews, non-connection, unavailability of the applicant on the appointed day and/or time or non-exhibition of a valid identity document or passport are a cause for exclusion from the public competition.

3. If technical problems occur during the interviews by videoconference, if the problem concerns one or more members of the selection committee, the interview is deferred to another date ex officio; if the problem concerns the applicant, the committee may, subject to the principles of non-discrimination and equal treatment of applicants, postpone the test to another date for justified reasons.

4. Once the examinations have been completed, the relevant selection committees draw up rankings on the basis of the scores obtained by the applicants in the individual tests.

Art. 5 – EVALUATION CRITERIA

1. The selection committee carries out a comparative assessment of the applicants. For applicants who have expressed a preference for positions tied to subject-related scholarships, the committee also ascertains their suitability for the specific subject.

2. The following scores will be awarded during the evaluation of the documents submitted with the application under Article 3:

a) up to a maximum of 10 points for: the curriculum vitae, the letter of motivation and qualifications;

b) up to a maximum of 10 points for: the congruence of the curriculum with the research areas of interest for the Ph.D and the ability to develop the proposed research projects

3. Applicants who reach the threshold of 10/20 points will be admitted to the interview. Admission to the interview and the relevant dates and times will be communicated on the unibz dedicated web page. Individual communications will be sent in due time to the e-mail address indicated in the application form to applicants admitted to the interview.

4. During the interview, the following elements will be assessed: basic technical knowledge and skills related to the topics of the call, research aptitude, the ability to argue theoretical and methodological hypotheses, including those related to the call's themes, and proficiency in the English language. Up to a maximum of 20 points will be awarded. The interview is considered passed with a minimum score of 10 out of 20 points.

5. The final score is made up of the sum of the scores obtained in the assessment of the documentation and interview. Applicants and candidates who have obtained at least 20/40 points will be eligible. In the event of a tied score, the applicant with the youngest age will have priority.

Art. 6 – RANKING

1. Applicants and candidates will be admitted to the programmes in the order of their ranking until the number of positions available is reached. In the event of equal merit, the applicant who is younger in age shall prevail. In the event of successful placement in more than one ranking list, the winner must exercise the option for only one position. Separate rankings will be drawn up for each position tied to a subject-related scholarship.

2. The final rankings will be published on the unibz website on the page dedicated to PhDs. Such publication has the value of an official communication. No individual communications will be made.