UNIVERSITY OF PARDUBICE	
Directive No. 6/2025	
Subject:	Admission rules to the 1st year of doctoral study programme P0788D060002 Electrical Engineering and Informatics for the academic year of 2026/2027
Scope of authority:	Faculty of Electrical Engineering and Informatics and doctoral programme applicants
In effect from:	Date of issue
Elaborated and submitted by:	Ing. Tomáš Zálabský, Ph.D., Vice-Dean for Research and Development
Approved by:	prof. Ing. Petr Doležel, PhD., Dean

Dean of the Faculty of Electrical Engineering and Informatics of the University of Pardubice invites applicants for the entrance exam for the first year of Doctoral Programme for the academic year of 2026/2027 in accordance with the Article No. 48, 49,50 Act No. 111/1998 Coll. on higher education institutions and on the amendement and supplementto some other acts, as amended (hereinafter the “Higher Education Act”) and sections 6 to 13 and 16 on the statuses of the University of Pardubice of 1 September 2025:

P0788D060002 Electrical Engineering and Informatics

Article 1
Application for studies

(1) Applications for study may be submitted electronically at http://eprihlaska.upce.cz.

(2) The deadline for submitting applications for the academic year 2026/27, including payment of the administrative fee, is from **01 January 2026** to **30 May 2026**.

(3) It is not necessary to send a copy of the electronic application form (hereinafter referred to as the "e-application") by post, and it is not necessary to prove payment of the admissions fee (hereinafter referred to as the "fee") by using the correct payment symbols generated at the end of the e-application.

(4) In addition to the programme of study and the form of study, the application form must list the topic of the dissertation and the name of the supervisor. The list of topics is attached to this Directive.

(5) If the application for studies does not have the prescribed requirements or suffers from other defects, the applicant will be asked to remove them. If the applicant fails to remedy the defects within the time limit set, he/she will not meet the conditions for the opening of the admission procedure and the procedure will be terminated by resolution.

(6) Based on the registered application for study, applicants will be invited by electronic means no later than 14 days before the date of the entrance examination to take part in the entrance examination and to submit the documents required to verify the required level of completed education.

(7) A medical certificate is not required.

Article 2
Method of submitting documents

(1) Applicants for the PhD study programme P0788D060002 Electrical Engineering and Informatics are obliged to send to the Study Department of the Faculty of Electrical Engineering and Informatics of the University of Pardubice the annexes to the application form in paper form, i.e. a structured CV in English, proof of the level of knowledge of the English language, officially certified proof of a previous master's degree and a copy of the passport (in the case of a foreign national applicant).

(2) The documents must be submitted by the applicant in the form of authorised conversion pursuant to Act No. 300/2008 Coll., on Electronic Acts and Authorised Conversion of Documents, or in the form of guaranteed conversion in the case of applicants from the Slovak Republic. The applicant uploads all documents to his/her electronic application. Authorised conversion of a hard-copy document into electronic form ensures that its content is identical to the original. The output of the authorised conversion must include a clause confirming the validity of the converted document in accordance with Section 25 of Act No. 300/2008 Coll.

(3) If the document is issued in an electronic version containing an electronic signature/stamp/seal, authorised conversion is not required.

(4) Applicants for study who do not have a permanent residence or delivery address in the territory of the Czech Republic may send their officially certified documents in hard copy or deliver them in person to the Faculty Study Department.

(5) Address for sending mandatory attachments:

University of Pardubice
Faculty of Electrical Engineering and Computer Science
Study Department
Studentská 95
532 10 Pardubice

Article 3
Administrative fees

(1) Administrative fees for the procedure of admission in study programme in English P0788D060002 are:

Application fee: CZK 2000
University Account Name: Univerzita Pardubice
Account number: 37030561/0100
Variable symbol: 6921
Constant symbol: 308
Specific symbol: personal university number (generated by e-application)
Banks Name: Komercni banka Pardubice
Bank Address: nam. Republiky 222, 530 78 Pardubice
IBAN: CZ2901000000000037030561
SWIFT: KOMBCZPPPXX

(2) The fee for the admission procedure is non-refundable.

(3) Fee for the assessment of education in the admissions procedure in accordance with the Directive No. 11/2019 Rules for the assessment of foreign secondary and higher education within the admission procedure at the University of Pardubice:

Recognition fee: CZK 800
University Account Name: Univerzita Pardubice
Account number: 37030561/0100
Variable symbol: 6929
Constant symbol: 308
Specific symbol: personal university number (generated by e-application)
Banks Name: Komercni banka Pardubice
Bank Address: nam. Republiky 222, 530 78 Pardubice
IBAN: CZ2901000000000037030561
SWIFT: KOMBCZPPPXX

(4) The fee for the admission procedure is non-refundable.

Article 4
Conditions for admission to study

1) A candidate who successfully completes the study of a follow-up master's degree programme and successfully passes the entrance examination may be admitted to study. If the applicant does not have a certified copy of the diploma by the date of the entrance examination, he/she shall provide a confirmation of the date of the state final examination. The certified copy of the diploma shall be presented immediately after receipt of the diploma, at the latest at the time of enrolment.

(2) Applicants' higher education may be recognised for the purposes of the admission procedure in accordance with the Directive No. 11/2019 - Rules for the Assessment of Foreign Higher Education in the Admission Procedure at the University of Pardubice.

Article 5
Admission procedure

(1) The regular date of the entrance examination is **24 June 2026**.

(2) A condition for admission to study in a doctoral study programme is proper completion of studies in a master's study programme and successful completion of the admission procedure, which includes:
-an oral examination in English,
-an oral professional examination according to the focus of the doctoral study programme.

The English language entrance exam assumes an entry level of B1+ SERR (formerly Intermediate). The exam will take the form of a motivational interview. The candidate will demonstrate the ability to communicate with some degree of independence in oral interaction in a personal and educational areas of language use, using relevant linguistic resources and structures. In terms of topics, the interview will focus primarily on previous study or work experience and motivation for further study and research in the chosen field in the doctoral

programme. During the interview, the candidate will also be able to briefly inform about the chosen topic and the aims of his/her dissertation.

The professional examination requires professional knowledge at the level of a completed master's degree programme with a focus on the topic of the doctoral dissertation and the presentation of a thesis on the expected dissertation topic.

(3) In the case of foreign applicants, the Admissions Committee may determine the form and conditions of the entrance examination which do not require the personal presence of the applicant.

(4) If more than one applicant applies for the same doctoral dissertation topic, the committee shall determine the order of the applicants according to the result of the admission procedure. If the next applicants in order successfully pass the entrance examination, the committee shall offer them the unfilled topics or diversify the topic in agreement with the supervisor. In the event that no agreement is reached on the dissertation topic, the candidates will be selected in order of preference.

Article 6
Method of deciding on admission

(1) A maximum of 4 applicants will be admitted to study in the order determined during the admission procedure.

(2) The decision on admission or non-admission to study will be issued within 30 days from the date on which the fulfilment of the conditions for admission (or non-admission) to study is verified, in accordance with Section 50(4) of the Higher Education Act. The decision on the applicant’s admission or non-admission to study will be published in each applicant’s electronic application.

(3) Students enrolled in a doctoral study programme in a foreign language are, for the purposes of determining the fee for studies in a foreign language, classified pursuant to paragraph 1(a) of Article 16 of the Statutes of the University of Pardubice, and the fee for their studies is regulated in Annex No. 1 to these Statutes.

In Pardubice, 15th December, 2025

prof. Ing. Petr Doležel, Ph.D.
Dean

Doctoral Thesis Topics 2026/2027

1.

Supervisor: prof. Ing. Petr Doležel, Ph.D.

Supervisor – specialist: Ing. Dominik Štursa, Ph.D.

Modeling and Optimization of Neural Network Learning Trajectories through Loss Hyperspace Approximation

The dissertation will focus on the development of methods for modeling and optimizing the learning trajectory of artificial neural networks in the hyperspace of the objective (loss) function. The core idea is to employ an auxiliary neural network or another approximator to represent the topology of the loss landscape and subsequently guide the training process of the primary network based on this approximation. The aim is to achieve faster convergence, reduce the risk of being trapped in unfavorable regions, and improve the generalization ability of neural networks. The research will combine deep learning approaches with differential-geometric analyses of the error hyperspace, with results experimentally validated on standard benchmark tasks as well as on custom datasets.

2.

Supervisor: Ing. Tomáš Zálabský, PhD.

Robust space–time adaptive processing (STAP) of radar signals with reduced dimensionality for the detection of low-flying targets in a nonhomogeneous environment.

The dissertation will focus on the design and verification of robust space–time adaptive processing (STAP) for pulsed multichannel radars. The objective is to reliably detect low-flying small targets (e.g., unmanned aerial vehicles) in a nonhomogeneous environment, with a limited number of training samples and tolerance to small inter-channel calibration errors. The approach is based on localized processing in the angle–Doppler domain and on data-efficient covariance-matrix estimation (diagonal loading and shrinkage estimates). The problem dimensionality will be reduced using eigenvectors of the signal subspace and other suitable methods, thereby lowering training and computational requirements. Performance will be compared with standard practice in primary surveillance radars. The evaluation will focus on target visibility below ground clutter (improvement factor), the change in signal-to-interference-plus-noise ratio, probability of detection and false alarm, stability of the adaptive detection threshold, and processing latency. The outcome will be a validated STAP algorithm suitable for practical implementation in multifunction radar systems with an active electronically scanned array (AESA).

3.

Supervisor: doc. Ing. Jan Pidanič, Ph.D.

Supervisor – specialist: Ing. Karel Juryca, Ph.D.

Hybrid Anti-Jamming Techniques for Primary (Pulsed) Radars: A Multi-Level Integrated Framework

The dissertation will focus on the design and verification of a hybrid countermeasure concept (ECCM technique) for primary pulse radars operating in the X band, aimed at suppressing various types of broadband noise interference. The proposed approach will combine multiple

layers of countermeasures based on analysis of the received signal. The resulting algorithm will select appropriate countermeasures based on: the variability of radar signal parameters (LFM, NLFM, phase-coded signals), frequency and time agility, spatial processing (directional interference suppression), and adaptive detection. The goal is to optimize resource allocation in the time-frequency-space domain to maximize interference suppression while maintaining false alarm limits. The work will include formal modeling, stochastic descriptions of interference coverage, and multi-criteria optimization, supplemented by simulations and experimental verification on a prototype. The expected result of the work is to establish methodologies and algorithms that increase detection performance in the presence of broadband interference and can be implemented in practice. The key idea is the optimized interaction of multiple ECCM techniques so that the jammer must simultaneously cover a wide frequency and time spectrum, allowing the primary radar to detect targets.

4.

Supervisor: doc. Ing. Dušan Kopecký, Ph.D.

Protective shields for autonomous systems against electromagnetic interference

The advent of autonomous systems such as robotic assistants, drones, and self-driving vehicles has led to an increase in the use of positioning devices such as microwave sensors and advanced lidar, radar, and radio technology. This also increases the likelihood of unwanted interference between this electromagnetic radiation and the integrated circuits of autonomous devices, which can lead to an increased likelihood of dangerous phenomena, including accidents and loss of life.
The aim of this work is therefore to design, simulate, and test new structures for attenuating electromagnetic interference and to apply them as protective shields in the operational electromagnetic spectrum of existing positioning systems. The work will focus on finding suitable electrical and magnetic structures and the subsequent design and testing of protective shields. The work will also include modelling and evaluating the shielding effectiveness of protective shields in simulated and real operating conditions of autonomous systems.