BRNO UNIVERSITY OF TECHNOLOGY
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GUIDELINE NO. 7/2024: RULES OF THE ADMISSION PROCEDURE AND CONDITIONS OF ADMISSIONS FOR STUDY IN A MASTER'S DEGREE PROGRAMME FOR THE ACADEMIC YEAR 2025/2026

Article 1
Subject of the guideline

1. These rules govern the conditions of admission for study in Master's degree programmes offered by the Faculty of Information Technology, Brno University of Technology (hereinafter referred to only as the "Faculty") for the academic year 2025/2026 in accordance with Act No. 111/1998 Coll., on Higher Education Institutions and on amendment and supplementation of certain other Acts (the Higher Education Act) as amended (hereinafter referred to only as the "Act") and the Statutes of Brno University of Technology (hereinafter referred to only as the "Statutes").
2. For the academic year 2025/26, the Faculty will be opening a Master's degree programme in Czech in Information technology and artificial intelligence (N0619A140001) with the specialisations Application development (NADE), Bioinformatics and biocomputing (NBIO), Cyber-physical systems (NCPS), Embedded systems (NEMB), Computer graphics and interaction (NGRI), High performance computing (NHPC), Intelligent devices (NIDE), Information systems and databases (NISD), Intelligent systems (NISY), Machine learning (NMAL), Mathematical methods (NMAT), Computer networks (NNET), Cybersecurity (NSEC), Software engineering (NSEN), Sound, speech and natural language processing (NSPE), Software verification and testing (NVER) and Computer vision (NVIZ).
3. A Master's degree programme in English will also be opened in the academic year 2025/2026 entitled Master of Information Technology (N0613A140038), which is not subdivided into specialisations.
4. The study programmes allow only full-time study.
5. The Dean manages the course of the admission procedure. For this purpose, the Dean appoints an Admissions Committee headed by a chairperson, who is usually the Vice-Dean for Educational Activities in Master's Studies.

Article 2
Conditions for admission

1. The basic condition of admission for study in a Master's degree programme is, in accordance with Section 48(1) of the Act, that the applicant has obtained a university degree.

2. Another condition of admission for study is meeting of the prerequisites for studying in the study programme in question, as defined in Section 49(1) of the Act. This condition is verified by an entrance examination. The need for the applicant to take the entrance examination may be waived.

Article 3
Waiving the need to take the entrance exam

1. The entrance exam may be waived at the applicant's request on the basis of documented previous outstanding results (professional or academic). The application must be accompanied by:
    a. an assessment of all completed courses (or a Diploma Supplement),
    b. a professional CV.
2. The applicant must apply for the waiver by mail or electronically and provide all necessary documents by 5th May 2025.
3. The dean will decide on the waiver based on the proposal by the Admissions Committee and will notify the applicant about the decision.
4. The applicant will be notified whether the application for waiving of the entrance exam has been granted within one month before the date of the entrance exam. Notification will be sent via email to the email address provided in the e-application. At the same time, the notification will be visible and available in the e-application.
5. Active students in the Bachelor's degree programme at the FIT whose weighted average of results from the compulsory courses completed so far in this programme does not exceed the threshold announced by the Dean's decision for the given year do not need to submit this application and the entrance examination is waived for them on the basis of a duly submitted application.

Article 4
The maximum number of accepted applicants

1. At most 300 applicants can be admitted for each study programme.

Article 5
Deadline for submission for the application for study

1. The application can be submitted from 1st January 2025 to 15th April 2025. The application for the study programme in English can be submitted from 1st November 2024 to 31st March 2025.

Article 6
Application for study

1. The admission procedure for the applicant starts by the delivery of the application to the Faculty by the specified deadline.
2. Applications for study are submitted electronically.
3. The applicant is also obliged, at the latest before the decision on admission for study is issued, to submit an officially certified copy of a document proving completion of a course of higher education or a document pursuant to Section 48(5) of the Act or a simple copy of the diploma if the applicant is a graduate of Brno University of Technology. If the diploma or the document referred to in Section 48(5) of the Act is not delivered by the deadline for enrolment in a given academic year, the applicant cannot be admitted for study and the admission procedure will be terminated.
4. The fee for acts relating to the admission procedure for the academic year 2025/2026, according to Decision No. 5/2024 of the Rector of Brno University of Technology, amounts to:

- **CZK 700.00** for each submitted application for study when paying in the Czech Republic to the account of Brno University of Technology number 117729823/0300, name of bank Československá obchodní banka, a.s., IBAN: CZ5603000000000117729823, BIC CEKOCZPP, name of account: Vysoké učení technické v Brně.
- **€ 28.00** for each submitted application for study when paying in all other countries except the Czech Republic to the account of Brno University of Technology number 1017476763/0300, name of bank Československá obchodní banka, a.s., IBAN: CZ0403000000001017476763, SWIFT (BIC) CEKOCZPP, name of account: Vysoké učení technické v Brně.

The bank details will also be displayed on the website of Brno University of Technology after submission of the electronic application. The fee must be paid no later than **15th April 2025**. If the applicant fails to pay this fee by the deadline, the admission procedure will be terminated.

5. The fee for acts relating to the assessment of foreign education within the framework of the admission procedure for the academic year 2025/2026, according to Decision No. 4/2024 of the Rector of the Rector of Brno University of Technology, amounts to:
   - **CZK 750.00** for each submitted application for assessment of foreign education when paying in the Czech Republic to the account of Brno University of Technology number 117729823/0300 name of bank Československá obchodní banka, a.s., IBAN: CZ5603000000000117729823, BIC CEKOCZPP, name of account: Vysoké učení technické v Brně,
   - **€ 30.00** for each submitted application for assessment of foreign education when paying in all other countries except the Czech Republic to the account of Brno University of Technology number 1017476763/0300, name of bank Československá obchodní banka, a.s., IBAN: CZ0403000000001017476763, SWIFT (BIC) CEKOCZPP, name of account: Vysoké učení technické v Brně.

   The bank details will also be displayed on the website of Brno University of Technology after submission of the electronic application. If the fee for acts relating to the assessment of foreign education is not paid, the Faculty will not perform the assessment pursuant to Section 48(5)(c) of the Act. In such a case, the applicant is obliged to prove his/her prior education in accordance with Section 48(5)(a) or (b) of the Act, otherwise the Faculty will terminate the admission procedure.

6. The fee is deemed to have been paid at the moment of crediting the fee to the account. The fee is non-refundable.

7. If the application exhibits any defects, the Faculty will invite the applicant to remedy them. If the applicant fails to remedy these defects within the prescribed time limit or if the applicant fails to pay the admission fee in the prescribed manner, the Faculty will terminate the admission procedure. The applicant must be informed of this consequence.

8. Conditions of study for foreigners in Czech are given aby Article 30 or the Statues.

Article 7
Entrance exam

1. The entrance exam is taken in writing in Czech by applicants for enrolment in the study programme and verifies their knowledge at the level of the Bachelor's degree programme in Information Technology. Its content is defined by the subject areas listed in Appendix 1. In the event that objective external circumstances, e.g. decisions of state authorities, do not allow the entrance examination to be conducted in person, the Dean may waive the requirement for applicants so sit the entrance examination.

2. The entrance exam for the study programme taught in English consists of the evaluation of the documents provided by the applicant. These documents must include: curriculum vitae, grades obtained in courses completed during the Bachelor study that are relevant in the area of

information technology, a cover letter for the study at FIT BUT, auto evaluation test taken from the mathematical areas specified in Appendix 1 and an example of one IT project solved by the applicant alone. If more people participated on the project, the applicant must specify, which parts of the project are his/her own creation and what percentage of the project was he/she responsible for. The Admissions Committee evaluates the submitted materials and if there are doubts about them, the committee might request an interview with the applicant. This interview can be carried out using electronic means.

3. The Dean appoints the chairpersons and members of the examination committees. Article 27(5) of the Statutes governs management of documentation relating to the entrance examination and other facts relevant to admission for study.
4. The written entrance examination will be held for applications submitted pursuant to Article 5(1) for the study programme in Czech on **6th June 2025**.
5. The applicants will receive the invitation to attend at least one month before the actual exam. The invitation will state the place, date and time of the exam. The invitation is sent electronically to the e-mail address provided in the e-application. At the same time, the invitation is made available to the applicant in the e-application
6. It the applicant fails to turn up for the entrance examination without an excuse or if his/her excuse is not accepted, the admission procedure is terminated
7. The entrance exam may only be taken on an alternative date for serious and documented medical or other comparable reasons. In the event that a candidate is unable to attend the examination for serious reasons, he/she must excuse himself/herself in writing before the date of the entrance exam or no later than five working days after the date of the exam with statement of this reason sent to the Dean via the Study Department. The Dean will decide whether to accept this excuse and hold the examination on an alternative date. The Dean's decision is final, and the candidate will receive electronic notification of this sent to the email address provided in the e-application. This is also made available to the applicant in the e-application. The alternative date of the entrance exam is set to **29th August 2025**.
8. The applicants that have successfully passed the entrance examination and have gained a place in accordance with Article 4 may be admitted for study.

Article 8
Admittance to study

1. Applicants for the study who were exempt from taking the entrance exam are admitted. Other applicants are ranked based on their scores in descending order.
2. The Admissions Committee will draw up a proposal for the admission of applicants. Applicants with an entrance exam score equal to or higher than the admission threshold will be proposed for admission. This threshold will be set by the Dean subject to proposal by the Admissions Committee. In addition to this, all applicants who have the same score on the waiting list as the last admitted applicant will be proposed for admission. The proposal will become valid after approval by the Dean.
3. The decision on admission to study is issued at most 30 days after verifying that all conditions of the admission procedure were fulfilled.
4. The decision can by appealed within 30 days of its issue.

Article 9
Closing provisions

1. The applicant has the right to view his/her file from the date of notification of the decision during the office hours of the Study Department.
2. These rules were approved in accordance with Section 27(1)(e) of the Act by the Academic Senate of the Faculty of Information Technology on 15th October 2024. These rules become valid on the date of their approval. These rules become effective on the date on which they become valid.

doc. Dr. Ing. Petr Hanáček
Dean of FIT BUT

Ing. Radek Kočí, Ph.D.
The Chair of AS FIT BUT

Appendix 1

Thematic areas for the entrance examination for the Master's degree programme in Information technology and artificial intelligence implemented by the Faculty of Information Technology at Brno University of Technology for the Academic Year 2025/2026

1. Principle of operation of semiconductor components (diode, bipolar and unipolar transistor in switching mode, implementation of NAND and NOR logic elements in CMOS technology).
2. Combinational logic circuits (multiplexer, demultiplexer, encoder, decoder, binary adder).
3. Sequential logic circuits (flip-flop circuits, counters, registers, state machines - representation and implementation).
4. Memory hierarchy in a computer (memory types and principles, locality principle, organization of the fast buffer memory).
5. Embedded systems (microcontroller, peripherals, interfaces, converters).
6. Principles of control and connection of peripheral devices (interrupts, program handling, direct memory access, bus).
7. Operating principles of a computer (chained instruction processing, RISC, CISC).
8. Minimisation of logical expressions (algebraic methods, Karnaugh map, Quine-McCluskey).
9. Representation of numbers and basic binary arithmetic operations in a computer (complementary codes, addition, subtraction, multiplication, fixed and floating point, IEEE 754 standard).
10. 2D vector graphics: methods of rasterization of segments and polygons, representation of objects using Bézier curves.
11. Transformation and display of 3D polygonal models, principles of the programmable rendering chain.
12. Principles of graphical user interfaces (communication channels, communication modes, event-driven systems, standard interface elements, MVC pattern).

13. Spectral analysis of continuous and discrete signals.
14. Digital filters (difference equation, impulse response, transfer function, frequency response).
15. Sets, relations and mapping.
16. Differential and integral calculus of functions of one or more variables.
17. Numeral systems and conversions between them.
18. Propositional and predicate logic. Syntax and semantics of the propositional logic. Satisfiability and validity. Logic equivalence and logical consequent. Normal forms. Language of the first order predicate logic. Syntax, terms and formulae, free and bonded variables. Proving in propositional and predicate logic. First order theories and their consequences.
19. Boolean algebras.
20. Regular languages and their models (finite automata, regular expressions).
21. Context-free languages and their models (pushdown automata, context-free grammars).
22. Structure of a compiler and characteristics of compilation phases (lexical analysis, deterministic syntactic analysis and code generation).
23. Numerical methods (direct and iterative methods for solving systems of linear equations, numerical solution of algebraic and ordinary differential equations, interpolation and approximation of functions).
24. Graph theory. Graph, basic concepts, graph isomorphism, connectivity. Graph algorithms for finding the shortest path and minimum spanning tree.
25. Problem solving (state space search, decomposition into subtasks, gaming methods).
26. Machine learning (learning with a teacher, learning without a teacher, reinforcement learning).
27. Principles of modelling and simulation of systems (systems, models, simulations, simulation control algorithms).
28. Data and control structures in the imperative programming languages.
29. Searching and sorting.
30. Mathematical probability (basic concepts, random variable and vector, distribution of probability, generation of pseudorandom numbers, point and interval approximation of parameters, testing of hypotheses, regression and corelation analysis).
31. Evaluating the complexity of algorithms (memory and time complexity, asymptotic time complexity, determining time complexity).
32. Software life cycle (characteristics of stages and basic models).
33. UML.
34. Conceptual modelling and relational database design.
35. Representation and storage of structured data, serialisation and deserialization, relational data model, SQL, transactions (database and business).
36. Web-based user and application interfaces, session management and authentication.
37. File and memory management principles and structures.
38. Scheduling and synchronisation of processes, transaction.
39. Object orientation (basic concepts, class- and prototype-oriented languages, OO approach to software development).
40. Programming in symbolic instruction language (computer operation, machine language, symbolic language, assembler).
41. Application layer services (web, e-mail, DNS, IP telephony, SNMP management, NetFlow).
42. TCP/IP communication (client-server model, TCP, UDP and IP protocols, TCP flow control and management).
43. Routing and security of traffic in computer networks (Link-State, Distance-Vector, encryption, authentication and data integrity algorithms).