ŽILINSKÁ UNIVERZITA
V ŽILINE

DESCRIPTION OF THE STUDY PROGRAMME

Name of faculty: Faculty of Electrical Engineering and Information Technology
Name of the study programme: telecommunicationsLevel of study: 3.
Date of approval *of the creation* or *last modification of* the study programme by the UNIZA Accreditation Board: 31.8.2022
Date of the last *corrections to the DESCRIPTION* of the study programme: 26.4.2023

1.	**Basic information about the study programme**			
a	**Name of the study programme**	**Telecommunications**	Number according to the SP register	**103521**
b	**Undergraduate degree**	**3.**	ISCED_F grade code education	**864**
c	**Location(s) of study**	**Univerzitná 8215/1, 010 26 Žilina**		
d	**Name of the field of study**	Informatics	Number of the field of study according to the SP register	2508V00
			ISCED_F code of the field(s)[1]	0610
e	**Type of study program**	Academically oriented		
f	**Academic degree awarded**	PhD.		
g	**Form of study**	External		
h	**Cooperating universities and definitions**	-		
i	**Language of the study programme**	English		
j	**Standard length of study**	4 years		
k	**Capacity of the study programme (planned number of students)**	Listed in the documents "Principles and Rules of the FEIT Admission Procedure" available: https://feit.uniza.sk/studenti/doktorandske-studium/ a "FEIT Annual Reports" for each year, available: https://feit.uniza.sk/fakulta/uradna-tabula/		
	Actual number of applicants	Listed in the documents "Report on the evaluation of the quality of education at the FEIT faculty level" for individual academic years *https://www.uniza.sk/index.php/component/content/article/4273-sprava-o-hodnoteni-kvality-vzdelavania-na-urovni-fakulty-feit?catid=2:uncategorised&Itemid=101* a "FEIT Annual Reports" for each year, available: https://feit.uniza.sk/fakulta/uradna-tabula/		
	Number of students	Listed in the documents "Report on the evaluation of the quality of education at the FEIT faculty level" for individual academic years		

[1] *According to https://ciselniky.portalvs.sk/classifier/show/basic/4*

		https://www.uniza.sk/index.php/component/content/article/4273-sprava-o-hodnoteni-kvality-vzdelavania-na-urovni-fakulty-feit?catid=2:uncategorised&Itemid=101 a "FEIT Annual Reports" for each year, available: https://feit.uniza.sk/fakulta/uradna-tabula/

2.	Graduate profile and learning objectives	
a	**Objectives of Study Programme Education as Student's Abilities at the Time of Completion of the Study Programme and Main Learning Outcomes**	**Graduate profile:** A graduate of the third degree of university studies in the study programme Telecommunications will gain deep theoretical and methodological knowledge, as well as practical experience in the key areas of information and communication technologies and multimedia at the level of the current state of research in the world. He/she will learn the principles of individual and team scientific work, scientific research, scientific formulation of problems, solving complex scientific problems and presentation of scientific results, is able to analyze and solve complex and non-standard tasks in the field of information and communication technologies and multimedia and bring original and new solutions. He/she is able to creatively apply the acquired knowledge in practice, he/she will find professional employment in various branches of science, research, industry and services in the public and private sectors. In addition to the above-mentioned theoretical knowledge, a graduate of the third degree of university studies in the Telecommunications study program will acquire additional knowledge, abilities and skills and will be able to lead smaller and larger teams of scientific, research and development workers, lead large projects and take responsibility for complex solutions to scientific and research problems. The graduate will be able to follow the latest scientific and research trends in information and communication technologies and multimedia and supplement and update their knowledge in the form of lifelong learning. The graduate will master the principles of managerial work, design of an experiment with a time schedule, leadership and control of team workers, can communicate and cooperate with managers of scientific projects and specialists from other professions, can apply the legal, social, moral, ethical, economic and environmental aspects of their profession in their work. **Learning objectives** [CV1] He/she is able to critically analyze the results achieved using simulations and measurements, as well as the results presented in scientific outputs, and formulate his/her own conclusions and hypotheses. [CV2] He/she can independently present the results of his/her work. [CV3] He/she is able to use the acquired knowledge to evaluate and justify the suitability of the use of individual methods for solving research tasks. [CV4] He/she can design and apply methods of simulation and measurement of antenna, radio channel and system parameters in order to increase the quality of transmission and develop new solutions in the field of radio communication systems. [CV5] He is able to apply methods of simulation and processing of optical signals to the issue of increasing the efficiency of optical signal transmission and to the development of new communication systems based on fiber and integrated optics technology.

[CV6] He/she is able to apply methods of analysis and digital processing of various types of signals in the design of his/her own solutions.
[CV7] It can design its own implementations based on various machine learning methods.
[CV8] He/she can apply the approaches used in digital communications when designing his/her own solutions

Learning outcomes

[VV1] Deepening professional and methodological knowledge in the field of information and communication systems and networks and multimedia.
[VV2] Analysis and design of innovative solutions in the field of information and communication technologies and multimedia in order to formulate scientific goals.
[VV3] Creation, implementation and evaluation of simulations and experiments focused on ICT systems and networks, signal processing tools as well as advanced solutions in the given areas in order to formulate scientific outputs.
[VV4] A high degree of autonomy and responsibility in solving complex problems in the context of information and communication technologies and multimedia in both known and unknown environments.
[VV5] Analytical, creative and critical thinking.
[VV6] Ability to work as a team and lead a team.
[VV7] Professional presentation of the results of their own research and the ability to network with other research teams.
[VV8] Interest in personal growth with a high degree of autonomy.

Checktable – learning outcomes.

Name of study programme: Telecommunications

Year of study	**Profile Subject / SP Subject**	[VV1]	[VV2]	[VV3]	[VV4]	[VV5]	[VV6]	[VV7]	[VV8
1	Digital Communication Theory	X	X	X		X		X	
1	Theory of Digital Signal Processing	X	X	X		X		X	
1	Theory of Radio Communication Systems and Networks	X	X	X		X		X	
1	Theory of antennas and electromagnetic wave propagation	X	X	X		X		X	
1	Theory of Fiber and Integrated Optics	X	X	X		X		X	
1	Theory of Optical Communication Systems and Networks	X	X	X		X		X	
1	Theory of image and sound processing	X	X	X		X		X	
1	Neural Network and Deep Learning	X	X	X		X		X	
1	Theory theory of 3D image processing	X	X	X		X		X	
1	World language							X*	

1	Written work for the dissertation exam and defense of the written work for the dissertation exam	X	X	X	X	X		X	X
2	dissertation project I	X	X	X	X	X		X	X
2	dissertation project II	X	X	X	X	X		X	X
3	dissertation project III	X	X	X	X	X		X	X
3	dissertation project IV	X	X	X	X	X		X	X
1-3	Individual and team scientific work	X	X	X	X	X	X	X	X
1-3	Pedagogical activities						X		
1	Basics of scientific work		X		X	X	X	X	X

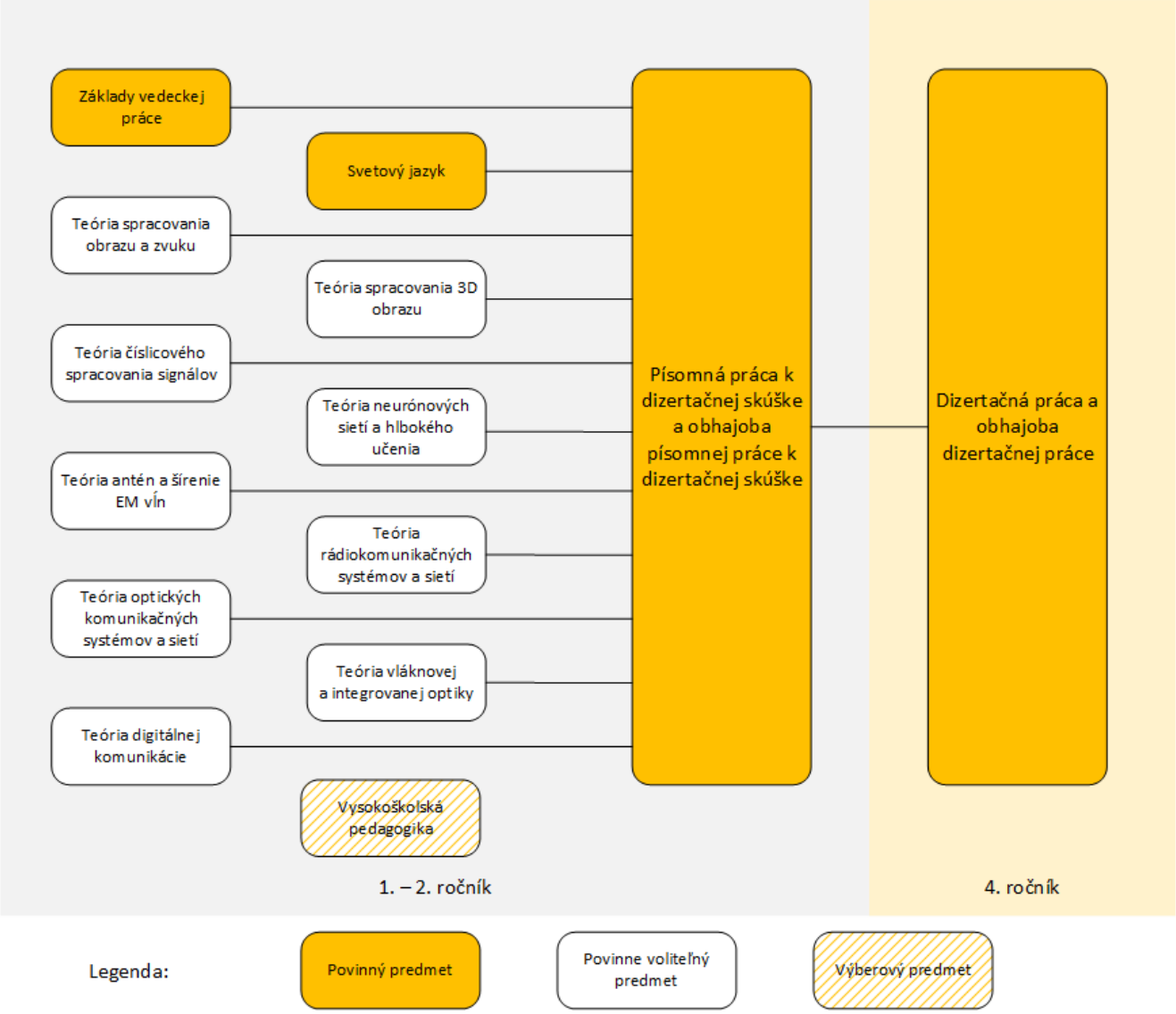
* only professional presentation is applied

b	**Indicated professions for which the graduate is prepared at the time of graduation and the potential of the study programme from the point of view of the employment of graduates**	Research and Development Manager in Information Technology and Telecommunications Description: The Information Technology and Telecommunications R&D Manager is responsible for IT and/or communication technology R&D. He is responsible for the effective implementation of new products, solutions and propositions in the field of IT and telecommunications and for compliance with security standards. It follows new trends in the development of information technology and telecommunications, which it implements in practice. He manages a team of specialists in research and development. Line: https://www.sustavapovolani.sk/karta_zamestnania-40472-29 Assistant Professor Description: An assistant professor of a higher education institution performs educational (pedagogical), scientific research, publication and educational activities at a higher education institution. As an author, or co-author, he participates in the active outputs of these activities. Conducts lectures from selected chapters, seminars and exercises, evaluates students, supervises and opposes final theses in the first two levels of higher education, creates study materials. It conducts consultations for students, provides excursions and professional practice for students. It participates in the research, development or artistic activities of the department and the publication of results in journals and at scientific, professional or artistic events. An assistant professor with a third-level university degree examines state examinations in bachelor's degree study programmes. Line: https://www.sustavapovolani.sk/karta_zamestnania-496034-33
c	**Relevant external stakeholders who have provided an opinion or a favourable opinion on the compliance of the obtained qualification with sector-specific professional requirements**	The study programme does not prepare for a profession requiring an opinion on the conformity of the acquired qualification

3.	Applicability	
a	**Assessment of the employability of graduates of the study programme**	Graduates of the doctoral study programme in telecommunications are employed as managers, researchers and specialist workers in companies, institutes and research centres, where the highest level of critical and constructive thinking, proactive approach and inventiveness in solving highly professional problems is required, as well as a high level of responsibility and self-reflection in relation to work and its results.
b	**Successful graduates of the study programme**	Name and surname: Ing. Štefan Pollák, PhD. Company name (job position): CGI Slovakia s.r.o., PL/SQL developer Professional profile: RIC project for the client Slovak Telekom as a PL/SQL developer, analysis and optimization of existing solutions with regard to performance (performance tuning/optimization) Name and surname: Ing. Igor Guoth, PhD. Company Name (Job Title): Profect GmbH, Software developer Professional profile: development of frontend and backend software solutions for financial institutions. Name and surname: Ing. Jana Šajgalíková, PhD. Company name (job position): Orange Business Services Slovakia s.r.o., Technical Design Team Consultant
c	**Evaluation of the quality of the study programme by employers**	The survey among employers is part of the monitoring of the quality of the study programme and its implementation is planned at an interval of 3 years. The study program of telecommunications has been long-term and stably established in the doctoral level of study at the Faculty of Electrical Engineering and Information Technology of the University of Žilina. Part of the professional focus is oriented to multimedia technologies. Graduates of this study program find employment not only in academia, but especially in industry in various research and management positions. In the long term, the ability of graduates of the study programme to creatively apply theoretical knowledge and practical skills to solve the most complex research problems and innovation challenges in the field of information and communication technologies is positively perceived by employers. The uniqueness of the presented study programme is accentuated with a focus on various communication platforms (wireless, optical and also computer networks), which makes the graduate prepared for practically all essential communication platforms. The proof of the truth of these statements is the willingness of industry representatives to work closely with the department and to enter the educational process in various forms, from professional lectures, workshops to project cooperation, the implementation of which is also attended by doctoral students. The workplace regularly monitors feedback from employers of graduates, but so far this has been carried out on the basis of personal interviews. The conclusions of these feedbacks were implemented in the adjustments of the study programme as part of its harmonization. In connection with the harmonization according to the UNIZA internal

		quality system, feedback from industrial companies was obtained, which evaluates the following features of graduates (with a rating on a scale from 1 (worst) to 5 (best)): • whether the graduate demonstrates knowledge and understanding of the field of study and is able to use it in an original way in the development and/or application of new concepts (e.g. research) in the company • whether the graduate can creatively solve problems in new or unknown environments and in broader contexts; • whether the graduate has the ability to integrate knowledge and make responsible (also ethically) decisions even in extensive, complex and unclear situations; • whether the graduate is able to clearly and unambiguously communicate conclusions, their knowledge and justifications to the professional and lay public; • whether the graduate has developed educational skills, including autonomy and autonomy of learning; a • whether the graduate has the ability to use a world language. In order to be able to assess the weight of the claims obtained, the approximate number of graduates in the company (1-5, 6-10, over 10) is also monitored.

4.	**Structure and content of the study programme**
	Rules for the creation of study plans in the study programme
a	They are listed in Directive No. 204 - Rules for the creation, modification, approval and cancellation of study programmes at UNIZA: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2
b	**Recommended study plans for each study trip**



c	**Study plan of the program**
	The study plan of the given SP is listed in e-education based on the choice of faculty, form of study and the name of the SP: https://vzdelavanie.uniza.sk/vzdelavanie/plany.php
d	**Number of credits, the achievement of which is a condition for the proper completion of studies**
	180
e	**Other conditions that the student must meet during the study of the study programme and for its proper completion, including the conditions of state examinations, the rules for repeating studies and the rules for extension, interruption of studies.**
	Conditions during the study: Continuous and final evaluation in individual subjects is part of the course information sheets, which can be found after the selection of the faculty, the form of study and the study programme itself under the name of the course at: https://vzdelavanie.uniza.sk/vzdelavanie/plany.php **Conditions for the course and proper completion of studies:** The study plan of a doctoral student consists of a study part, which ends with a dissertation exam, a scientific part and a dissertation defense. The number of credits for individual activities is determined by the EaM study plan and approved by the working group of the Field Committee and the FEIT Scientific Council.

The study part represents 50 credits from the scope of the study plan. It focuses on acquiring deep theoretical knowledge in the field of basics of materials with an emphasis on the multidisciplinary area and mastering the methodological apparatus supported by knowledge of selected mathematical, physical and professional disciplines. It consists of the study of two compulsory and two compulsory elective subjects and the compulsory subject Written Work for the Dissertation Exam and Defense of the Written Thesis for the Dissertation Exam. Compulsory subjects are Basics of Scientific Work and World Language. The choice of two compulsory elective courses depends on the topic of the dissertation. Each subject of the study part is assigned 10 credits. All subjects of the study part are subjects of the state examination.
The scientific part represents at least 130 credits from the scope of the study plan. It is carried out in Dissertation Projects I to IV and through individual and team scientific and research work, including the elaboration and defense of the dissertation. Dissertation projects I-IV represent comprehensive parts (stages) of the dissertation and 10 credits are assigned to each. The evaluated activities within individual and team scientific work are: publications in journals and conference proceedings, chapters in monographs/university textbooks, protection of intellectual property (patent, utility model), citations registered in the SCI citation index and active presentation of results at conferences. The allocation of credits for individual activities within individual and team scientific work is determined by the relevant regulations listed above.
Among the obligations of external doctoral students, which arise from the Act on Higher Education Institutions and on the Amendment of Certain Acts No. 300/2025 Coll., is also pedagogical activity.
The basic part of the study is the year in which the student is expected to obtain an average of 60 credits.
Part-time studies are divided into years as follows:

1. year - the student will receive at least 20 credits,
2. year - the student will receive at least 30 credits (or a total of at least 50 credits for the 1st and 2nd year),
3. year - the student will receive at least 50 credits,
4. Year - the student will receive so many credits to achieve a minimum of 180 credits for the entire study.

By 31 August for the relevant academic year at the latest, the supervisor submits to the Dean an annual evaluation of the fulfilment of the doctoral student's study programme, stating whether or not he/she recommends his/her continuation in his/her studies. The supervisor evaluates the status and level of fulfilment of the doctoral student's study programme, compliance with deadlines, awards credits and, if necessary, submits a proposal for modification of his/her individual study programme.
A doctoral student in the full-time form of doctoral studies applies for the dissertation examination no later than 18 months from the date of enrolment in doctoral studies. A doctoral student is obliged to submit a written work prepared for the dissertation examination together with the application for the dissertation examination. Failure to meet the conditions of a doctoral student to apply for the dissertation examination, or failure to submit a written work for the dissertation examination within the set deadline without the prior consent of the head of the training institute, is a reason for his/her expulsion from study.
The written work for the dissertation exam consists of a dissertation project containing an overview of the current state of knowledge on the topic, an outline of the theoretical foundations of its future solution and an analysis of the methodological approach to solving the issue. For the written work for the dissertation examination, the opinion is prepared by one opponent appointed by the dean.
The dissertation exam consists of Doctoral studies are carried out according to individual study plans, while the set of knowledge, abilities and skills is subordinated to the specific topic of the dissertation. The individual study plan is compiled by the supervisor in cooperation with the doctoral student according to the needs of the dissertation and submitted for approval to the chairman of the Telecommunications working group of the Informatics Departmental Committee, which is established according to the internal regulation of the university. The individual study plan consists of a study part and a scientific part, each of which is assigned an appropriate number of credits, and a pedagogical part.
The study part represents 50 credits from the scope of the study plan. It focuses on acquiring deep theoretical knowledge in the field of information and communication technologies and signal processing and multimedia information and acquiring a methodological apparatus supported by knowledge of selected mathematical, physical and professional disciplines. It consists of the study of two compulsory and two compulsory elective subjects and the compulsory subject Written Work for the Dissertation Exam and Defense of the Written Thesis for the Dissertation Exam. Compulsory subjects are Basics of Scientific Work and World Language. The choice of two compulsory elective courses depends on the topic of the dissertation. Each subject of the study part is assigned 10 credits. All subjects of the study part are subjects of the state examination.
The scientific part represents at least 130 credits from the scope of the study plan. It is carried out in Dissertation Projects I to IV and through individual and team scientific and research work, including the elaboration and defense of the dissertation. Dissertation projects I-IV represent comprehensive parts (stages) of the dissertation. Defenses of dissertation projects I-IV are carried out during the study in a commission form, while the dates are defined on the basis of an agreement between the student and the supervisor in the Study Plan of the doctoral student. The committee is formed by the chairman of the working group of the doctoral study committee in cooperation with the study guarantor. The amount of credits awarded is decided by the committee, with the maximum score being 10 credits per dissertation project. The student is informed about the result immediately after the defense of the project after a closed meeting of the committee. The evaluated activities within individual and team scientific work are: publications, intellectual property protection, citations, etc. The allocation of credits for individual and team scientific work is defined in the Guide to Doctoral Studies, which is published on the website of the Faculty of https://feit.uniza.sk/doktorandske-studium-sprievodca/. The Guide to

Doctoral Studies is approved by the Council of Guarantors of the Faculty and the Working Group of the Doctoral Study Committee, and reflects the importance of individual outputs. Credits for individual and team work are approved by the supervisor on the basis of the submitted annual evaluation of the doctoral student. Subsequently, the chairman of the working group of the trade union committee and the dean of the FEIT agree with the annual evaluation of the doctoral student, which ensures multi-level control of the allocated credits. In case of disagreement, the student may submit a motion for re-examination to the Dean of FEIT. The allocation of credits for individual activities within individual and team scientific work is determined by the relevant regulations listed above. The study ends with the defense of the dissertation, which is one of the state exams. After preparing and accepting the dissertation and defending it, the doctoral student will receive 30 credits (for the dissertation and its defence).

Among the obligations of doctoral students, which arise from the Act on Higher Education Institutions and on the Amendment of Certain Acts No. 131/2002 Coll., is also pedagogical activity. This activity is also valued with credits in accordance with the above regulations.

Specific conditions during the study: continuous and final evaluation of individual courses with the weight stated in the course information sheets; fulfilment of the condition of a minimum number of credits for advancing to a higher year of study in accordance with the above regulations.

The basic part of the study is the year in which the student is expected to obtain an average of 60 credits.

Part-time studies are divided into years as follows:

1. year - the student will receive at least 20 credits,
2. year - the student will receive at least 30 credits (or a total of at least 50 credits for the 1st and 2nd year),
3. year - the student will receive at least 50 credits,
4. Year - the student will receive so many credits to achieve a minimum of 180 credits for the entire study.

The condition for advancing to the next part of the study is obtaining the prescribed number of credits in the given year of study. In case of failure to comply with this obligation, the student will be expelled from studying. The recommended study plan is compiled so that by completing it, the student meets the conditions for completing the study within the standard length of study.

Specific conditions for proper completion of studies: successful completion of exams in two compulsory subjects – World Language and Basics of Scientific Work and two compulsory elective professional subjects; elaboration and successful defense of the written part of the dissertation examination; development and successful defense of dissertation projects I to IV; individual and team scientific work; pedagogical activities; elaboration and successful defense of the dissertation.

Number of credits required for proper completion of studies: 180

the part consisting of a debate on the written work for the dissertation examination and the part in which the doctoral student is to demonstrate theoretical knowledge in the specified subjects of the dissertation examination. The dissertation examination takes place before an examination committee, whose chairman and members are appointed by the dean and on the basis of a proposal by the chairman of the trade union committee. The committee has at least four members, at least one of whom is not from the workplace where the doctoral student works. The overall result of the dissertation examination is evaluated by the examination committee comprehensively by the expression "passed" or "failed". A record of the dissertation examination is drawn up, where the committee states its recommendation at the end, or a proposal to modify the title of the dissertation. The dissertation exam is one of the state exams.

Other conditions:

They are listed in:

Directive No. 110 Study Regulations for the 3rd Level of Higher Education at the University of Žilina

https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2

f **Conditions for the completion of individual parts of the study programme and the progress of the student in the study programme in the structure**

Completion of studies = standard length of study *Completion of part of the study = 1 academic year*	**For the entire study**	**For part of the study**			
		1.r	**2.r**	**3.r**	**4.r**
number of credits for compulsory courses required for proper completion of studies	60	20	10	0	30
number of credits for compulsory elective courses required for proper completion of studies	20	20	0	0	0
number of credits for elective courses required for proper completion of studies	0	0	0	0	0
the number of credits for the final thesis and the defense of the final thesis required for the proper completion of the study	30	0	0	0	30

	the number of credits for professional experience required for the proper completion of studies	0	0	0	0	0
	Number of credits required for proper completion of studies for project work with an indication of relevant subjects in engineering study programmes	100	20	50	30	0
	the number of credits required for the proper completion of studies for artistic performances other than the final thesis in art study programmes	0	0	0	0	0

g	**Rules for the verification of learning outcomes and student assessment and the possibility of correcting this assessment**
	At the university level, the processes, procedures and structures are defined by Directive No. 110 Study Regulations for the 3rd Degree of Higher Education at the University of Žilina and Directive No. 216 Quality Assurance of Doctoral Studies at UNIZA https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 At the faculty level, these are the following documents: Dean's Decision on the Organization and Administrative Support of the 3rd Degree of Study https://feit.uniza.sk/oznamy-pre-doktorandov/ a Guide to Doctoral Studies at FEIT https://feit.uniza.sk/doktorandske-studium-sprievodca/
h	**Conditions for the recognition of studies or parts of studies**
	At the university level, the processes, procedures and structures are defined by Directive No. 110 Study Regulations for the 3rd level of higher education at the University of Žilina and Directive No. 216 Quality Assurance of Doctoral Studies at UNIZA. In the case of foreign mobilities and internships, the processes, procedures and structures of the conditions for the recognition of studies are defined by Directive No. 219 – Mobility of students and employees of the University of Žilina abroad. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 At the faculty level, these are the following documents: Dean's Decision on the Organization and Administrative Support of the 3rd Degree of Study https://feit.uniza.sk/oznamy-pre-doktorandov/ a Guide to Doctoral Studies at FEIT https://feit.uniza.sk/doktorandske-studium-sprievodca/
i	**Topics of final theses of the study programme**
	Topics of defended final theses **2020 Surname Name Trainer Theme** **2021 Surname Name Trainer Theme** **2022 Surname Name Trainer Theme** **2023 Surname Name Trainer Theme** **2024 Surname Name Trainer Theme** **2025 Surname Name Trainer Theme**
j	**Rules for the assignment, processing, opposition, defence and evaluation of final theses in the study programme**

At the university level, the processes, procedures and structures are defined by Directive No. 215 – Directive on Final, Rigorous and Habilitation Theses in the Conditions of the University of Žilina, Directive No. 110 Study Regulations for the 3rd Level of Higher Education at the University of Žilina and Directive No. 216 Quality Assurance of Doctoral Studies at UNIZA.
https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2

At the faculty level, the current Dean's Decision on the organization and administrative provision of the 3rd level of study at FEIT UNIZA in the given academic year applies and specific information for students:
https://feit.uniza.sk/oznamy-pre-doktorandov/ and https://feit.uniza.sk/studenti/doktorandske-studium/

Proposals for dissertation topics on the proposal of supervisors are approved by the Dean, who will announce them no later than two months before the last day for submitting applications for doctoral studies that can be applied for in the admission procedure. For each topic announced, the name of the study programme, the name of the supervisor, the form of study (full-time, part-time), the deadline for submitting applications and the date of the admission procedure are stated. Proposals for dissertation topics are announced and published on the official board of the faculty website, which also publishes the method and dates of student application for study. The date of publication of dissertation topics is determined by the academic calendar of the training workplace.
The entrance examination takes place in front of an admissions committee that has at least four members. The admissions committee consists of its chairman and at least two members appointed by the dean. Another member of the committee is the supervisor for the announced topic. The admissions committee evaluates the result of the entrance examination at a closed session with the conclusion "passed" or "failed". If several applicants have applied for one topic, their order will be determined by the success of the entrance examination. When determining the ranking, the committee also takes into account the scope and quality of the applicant's previous professional publishing activity and the results of his other professional activities. Based on the results of the entrance examination, the Dean will decide on the admission of the applicant within 30 days from the date of the entrance examination.
During the implementation of the study programme, the facts related to the fulfilment of the content of the individual study plan of the doctoral student are evaluated. The evaluation is carried out once a year at the end of the academic year by the supervisor and approved by the guarantor of the study programme and subsequently by the dean. The decisive facts are the dissertation exam and the defense of the dissertation. A doctoral student who has not fulfilled all the obligations arising from the individual study plan and does not have enough credits cannot apply for the dissertation exam or apply for permission to defend the dissertation.
Within the deadline set for the submission of the thesis, the author of the thesis personally uploads its electronic version identical to the bound version in the form of .pdf in one file with the possibility of converting it to plain text into the system of the Register of Final Theses (hereinafter referred to as EZP). Access to the EZP is via the website: http://kniznica.uniza.sk/ezp . UNIZA sends the thesis in electronic form to the Central Register of Final, Rigorous and Habilitation Theses (CRZP), where the degree of originality of the submitted thesis is verified. A doctoral student submits an application to the Dean for permission to defend his or her dissertation in accordance with the study schedule if he or she has obtained the prescribed number of credits. Together with the dissertation thesis, the relevant opinions of opponents, supervisors, supervisors of final theses or rigorous theses, reviewers or other persons are also sent in electronic form, and these opinions are stored in the Central Register of Final, Rigorous and Habilitation Theses together with the relevant thesis for the period of its storage. Further details are regulated by Directive No. 215 – Directive on Final, Rigorous and Habilitation Theses in the Conditions of the University of Žilina.

After receiving all the reviews from the opponents, the Dean forwards the doctoral student's application for permission to defend the dissertation together with all the requisites, including the opponents' opinions, to the chairman of the defence committee and the chair proposes to the dean the time and place of the defence of the dissertation. The dissertation together with its defense form one subject. The defence of the dissertation is a state examination and in the standard length of study, the doctoral student must complete it no later than in the last month of the last academic year of his/her standard length of study. The defence of the dissertation takes place in the form of a scientific debate. The defence may take place only in the presence of at least two-thirds of the number of members of the defence committee entitled to vote, including at least two opponents, while at least one member of the committee must be from a workplace outside UNIZA.
After the end of the defence, a closed meeting of the commission is held, which is attended by its members, including opponents and the supervisor. At a closed session, the course and result of the defence and the possibility of using the results of the dissertation in practice will be evaluated. At the same time, the commission and the opponents will decide in a secret ballot whether the commission will propose to award the doctoral student with an academic degree. Subsequently, the committee evaluates the defence of the dissertation with a grade, while the classification is carried out according to the classification scale specified in Directive No. 110 Study Regulations for the 3rd level of higher education at the University of Žilina. The proposal for awarding or not awarding an academic degree to a doctoral student together with the minutes and file material of the doctoral student is submitted by the chairman of the defence committee to the dean. After a positive assessment of the proposal of the dissertation defence committee for awarding or not awarding the academic title "Doctor" to a doctoral graduate, the Dean submits to the Rector documents on the completion of the study.

	The academic title "doctor" ("philosophiae doctor", abbreviated as "PhD.") is awarded by UNIZA with effect from the date of the successful defence of the dissertation. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 Documents on the completion of the EaM doctoral study programme in the field of electrical engineering are a university diploma, a state examination certificate and a diploma supplement. Documents on completion of studies are usually handed over to the doctoral student by the dean at the graduation ceremony, organized according to the traditions and customs of UNIZA.
k	**Opportunities and procedures for participation in student mobility**
	At the university level, the processes, procedures and structures are defined by Directive No. 219 – Mobility of students and employees of the University of Žilina abroad. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 At the faculty level, student mobility within doctoral studies is highly supported, and it is recommended to implement it after passing the dissertation exam (after about 18 months from the start of study). For the implementation of mobility, the student can obtain additional credits according to the rules set out in the Guide to Doctoral Studies at FEIT and also in the Dean's Decision on the Organization and Administrative Support of the 3rd Level of Study at FEIT UNIZA. https://feit.uniza.sk/doktorandske-studium-sprievodca/ https://feit.uniza.sk/studenti/studium-v-zahranici/ https://feit.uniza.sk/oznamy-pre-doktorandov/ At the faculty level, the coordinators and contact persons are: doc. Ing. Peter Hockicko, PhD. (Person in charge of international mobility and international cooperation), peter.hockickoniza.sk Mgr. Silvia Pirníková, (faculty Erasmus administrator), silvia.pirnikova@uniza.sk
l	**Rules for adherence to academic ethics and drawing consequences**
	At the university level, the processes, procedures and structures are defined by Directive No. 207 – Code of Ethics of the University of Žilina and Directive No. 201 – Disciplinary Code for Students of the University of Žilina. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 A Disciplinary Committee has been established at the faculty level, which discusses specific suggestions and misdemeanours of students in accordance with Directive No. 201. https://feit.uniza.sk/disciplinarna-komisia/
m	**Procedures applicable to students with special needs**
	At the university level, the processes, procedures and structures are defined by Directive No. 198 – Support for Applicants and Students with Special Needs at the University of Žilina and Directive No. 110 Study Regulations for the 3rd Level of Higher Education at the University of Žilina. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 Detailed information for students can be found on the website: https://www.uniza.sk/index.php/studenti/vseobecne-informacie/studenti-so-specifickymi-potrebami At the faculty level, the coordinators and contact persons are: doc. Ing. Mariana Beňová, PhD. (Vice-Dean for Education), mariana.benova@uniza.sk Bc. Emília Pekárová, (Education Officer), emilia.pekarova@uniza.sk
n	**Procedures for filing complaints and appeals by the student**

	At the university level, the processes, procedures and structures are defined by Directive No. 110 Study Regulations for the 3rd level of higher education at the University of Žilina. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 At the faculty level, through the published e-mail contacts of the responsible persons, through students represented in the student part of the FEIT Academic Senate and via the link We will advise you: https://feit.uniza.sk/studenti/poradime-vam/ or Link for the Dean: https://odkaz.feit.uniza.sk/

5.	**Study Programme Subject Information Sheets** *(in the structure according to Decree No. 614/2002 Coll.)*
	ILPs can be found in the e-learning system after selecting the faculty, form of study and the study program itself under the name of the subject at: https://vzdelavanie.uniza.sk/vzdelavanie/plany.php

6.	**Current academic year schedule and current schedule**	
	Academic calendar	https://feit.uniza.sk/akademicky-kalendar-pre-doktorandov-feit/
	Current schedule	https://vzdelavanie.uniza.sk/vzdelavanie/rozvrh2.php

7.	**Staffing of the study programme**		
a	**Name, surname and titles of the person responsible for the implementation, development and quality of the study programme (guarantor).**		
	Name, surname, titles: **prof. Ing. Peter Brída, PhD.** Function: Vice-Dean for Development and International Relations at FEIT UNIZA, garantkontakt (e-mail, tel.): peter.brida@uniza.sk; 041/513 2236		
b	**List of other persons responsible for the implementation, development and quality of the study programme (co-guarantors).**		
	prof. Ing. Milan Dado, PhD., KMIKT FEIT UNIZAprof. Ing. Peter **Počta, PhD**., KMIKT FEIT UNIZAdoc. Ing. Juraj **Machaj, PhD**., KMIKT FEIT UNIZAIng. Daniel **Benedikovič, PhD**., KMIKT FEIT UNIZA		
c	**List of all persons providing profile subjects of the study programme**		
	Name, surname and titles of the teacher in the position of associate professor or professor	Additional information	Profile Subject
	Ing. Daniel Benedikovič, PhD.	3D0E009	Theory of Fiber and Integrated Optics
	prof. Ing. Peter Brída, PhD.	3D0E003	Theory of Antennas and Radio Wave Propagation
	Prof. Ing. Milan Dado, PhD.	3D0E006	Theory of Optical Communication Systems and Networks
	Prof. Ing. Milan Dado, PhD.	3D0I001	Basics of scientific work
	prof. Ing. Róbert Hudec, PhD.	3D0E008	Theory of image and sound processing
	doc. Ing. Roman Jarina, PhD.	3D0E004	Theory of Digital Signal Processing
	doc. Ing. Roman Jarina, PhD.	3D0E010	Theory of neural networks and their deep learning
	doc. Ing. Patrik Kamencay, PhD.	3D0E011	theory of 3D image processing
	doc. Ing. Juraj Machaj, PhD.	3D0E007	Theory of Radio Communication Systems and Networks
	doc. Ing. Juraj Machaj, PhD.	3D0E012	World language
	prof. Ing. Peter Počta, PhD.	3D0E005	Digital Communication Theory

d	**List of all teachers (including doctoral students) of the study programme**			
	Teacher's name, surname and titles	The organizational form that the university teacher provides (P,C,L,T)	Additional information	Subject of the study programme
	Ing. Daniel Benedikovič, PhD.	exercises, exercises	3D0E006	Theory of Optical Communication Systems and Networks
	Ing. Daniel Benedikovič, PhD.	exercises, exercises	3D0E009	Theory of Fiber and Integrated Optics
	Ing. Daniel Benedikovič, PhD.	exercises, exercises	3D0E012	World language
	prof. Ing. Peter Brída, PhD.	exercises, exercises	3D0E003	Theory of antennas and electromagnetic wave propagation
	prof. Ing. Peter Brída, PhD.	exercises, exercises	3D0E007	Theory of Radio Communication Systems and Networks
	prof. Ing. Peter Brída, PhD.	exercises, exercises	3D0E012	World language
	prof. Ing. Peter Brída, PhD.	Lectures, lectures	3D0I001	Basics of scientific work
	Prof. Ing. Milan Dado, PhD.	exercises, exercises	3D0E005	Digital Communication Theory
	Prof. Ing. Milan Dado, PhD.	exercises, exercises	3D0E006	Theory of Optical Communication Systems and Networks
	Prof. Ing. Milan Dado, PhD.	exercises, exercises	3D0E009	Theory of Fiber and Integrated Optics
	Prof. Ing. Milan Dado, PhD.	exercises, exercises	3D0E012	World language
	Prof. Ing. Milan Dado, PhD.	Lectures, lectures	3D0I001	Basics of scientific work
	prof. Ing. Róbert Hudec, PhD.	exercises, exercises	3D0E004	Theory of Digital Signal Processing
	prof. Ing. Róbert Hudec, PhD.	exercises, exercises	3D0E005	Digital Communication Theory
	prof. Ing. Róbert Hudec, PhD.	exercises, exercises	3D0E008	Theory of image and sound processing
	prof. Ing. Róbert Hudec, PhD.	exercises, exercises	3D0E010	Theory of neural networks and their deep learning
	prof. Ing. Róbert Hudec, PhD.	exercises, exercises	3D0E011	theory of 3D image processing
	Mgr. Gabriela Chalupianská	exercises, exercises	3D00005	university pedagogy
	doc. Ing. Roman Jarina, PhD.	exercises, exercises	3D0E004	Theory of Digital Signal Processing
	doc. Ing. Roman Jarina, PhD.	exercises, exercises	3D0E005	Digital Communication Theory
	doc. Ing. Roman Jarina, PhD.	exercises, exercises	3D0E008	Theory of image and sound processing
	doc. Ing. Roman Jarina, PhD.	exercises, exercises	3D0E010	Theory of neural networks and their deep learning
	doc. Ing. Roman Jarina, PhD.	exercises, exercises	3D0E012	World language

	doc. Ing. Patrik Kamencay, PhD.	exercises, exercises	3D0E004	Theory of Digital Signal Processing
	doc. Ing. Patrik Kamencay, PhD.	exercises, exercises	3D0E008	Theory of image and sound processing
	doc. Ing. Patrik Kamencay, PhD.	exercises, exercises	3D0E010	Theory of neural networks and their deep learning
	doc. Ing. Patrik Kamencay, PhD.	exercises, exercises	3D0E011	theory of 3D image processing
	doc. Ing. Juraj Machaj, PhD.	exercises, exercises	3D0E003	Theory of antennas and electromagnetic wave propagation
	doc. Ing. Juraj Machaj, PhD.	exercises, exercises	3D0E007	Theory of Radio Communication Systems and Networks
	doc. Ing. Juraj Machaj, PhD.	exercises, exercises	3D0E012	World language
	PaedDr. Lenka Môcová, PhD.	exercises, exercises	3D00005	university pedagogy
	prof. Ing. Peter Počta, PhD.	exercises, exercises	3D0E005	Digital Communication Theory
	prof. Ing. Peter Počta, PhD.	exercises, exercises	3D0E012	World language
	Mgr. Jana Trabalíková, PhD.	exercises, exercises	3D00005	university pedagogy

e	**Student representatives who represent the interests of students in the study program**	
	Student's name, surname and titles	Contact
	Ing. Xavér Žák, 3rd year student	SP Council: https://feit.uniza.sk/fakulta/organy-fakulty/
f	**Study Programme Advisor**	
	Name, surname, titles: **Peter Brída, prof. Ing., PhD.** contact (e-mail, tel.): peter.brida@uniza.sk; 041/513 2237 Access to counselling: individual consultation and counselling.	
g	**Other support staff of the study programme (e.g. assigned study officer, career counsellor, administration, accommodation department, etc.)**	
	Area of responsibility / Competencies: **Department for Education,** study agenda. Name and surname: **Bc.Viera Beláková and Bc. Emília Pekarová** tel.: +421 41 513 2064, 2063 E-mail: studref@feit.uniza.sk Accommodation facilities UNIZA: https://www.uniza.sk/index.php/studenti/prakticke-informacie/ubytovanie Accommodation section, responsible person**: Renáta Šoková** tel.: +421 41 513 1471 E-mail: renata.sokova@uniza.sk	

8.	**Spatial, material and technical provision of the study programme and support**
a	**List and characteristics of the study programme classrooms and their technical equipment with assignment to the outcomes of education and subject** (laboratories, project and art studies, workshops, science and technology parks, technology incubators, school enterprises, practice centres, training schools, teaching and training facilities, sports halls, swimming pools, sports grounds)

At the university level, the processes and procedures are defined by Directive No. 218 on the collection of information: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2

Lectures and theoretically or computationally oriented seminar exercises are carried out in the common areas of the faculty (lecture halls/classrooms), or in the classrooms of the institute. These are equipped with basic didactic techniques such as whiteboards and data projectors.
Exercises and laboratory exercises specifically oriented to the field of informatics are provided by the Department of Multimedia and Information and Communication Technologies (KMIKT) in its laboratories, the technological equipment of which is regularly renewed. KMIKT covers a wide range of issues related to information and communication and multimedia technologies in pedagogical and scientific research activities. It is logically divided into 3 departments, namely the Department of Communication Technology, the Department of Information Technology and the Department of Multimedia, which are closely interconnected.
In the field **of communication technologies** , attention is focused on the issue of communication networks, software-defined networks, the Internet of Things, access technologies, the convergence of network technologies with the main activities focused on the quality of multimedia services. In terms of fixed network technologies, the department has significant activities in the field of research and development of technologies for broadband fully optical networks and photonic systems. In the field of radio technologies, it focuses on mobile and satellite communications, localization systems as well as DVB–x distribution technologies.
In the field **of information technology,** the department focuses on the development of applied informatics as a support for communication and multimedia technologies. The activities focus on the field of digital signal processing, mainly from the point of view of semantic analysis and annotation of audio and video signals, processing and recognition of speech signals, machine learning, including deep learning of neural networks, computer graphics, semantic web and web applications, or 3D modeling and virtual reality.
In the field **of multimedia technologies** , the main orientation is focused, in addition to the technological component, on the creative area represented by the basics of image composition, directing and work with multimedia material. The main objective of this area is to provide comprehensive support for multimedia services of the future, which are created by the inclusion of artistic creation and modern trends in the field of informatics. Research activities focus on the field of image and sound analysis, as well as evaluation of the quality of multimedia signals.
The provision of the pedagogical as well as scientific research process is carried out through 8 specialized laboratories and common infrastructure (fixed and wireless networks, server room).
1. The Digital Video Processing Laboratory (LoDVP) is a grouping of scientific and teaching staff, doctoral students and students with common research goals in the field of digital image and video processing. The laboratory consists of several sub-laboratories:

- Laboratory of Semantic Analysis of Image and Video Data (BD309).
- Laboratory of Applied Research and Prototype Solutions of Electronic Systems (BD317).
- 3D Modeling and 3D Printing Laboratory (AMT).
- Computer Graphics Laboratory (BD334).
- Computer Vision, Virtual Reality, and Game Development Laboratory (BD328).
- IoT Lab (BD333).
- Server room (BD301).
- Laboratory of Artificial Intelligence and Cybernetics (UVP, A0.07).

The Laboratory of Semantic Analysis of Image and Video Data (VIDEO *lab*) is located in room BD309. In this part of the laboratory, research is focused on semantic analysis of video data with application to various industries such as the web, transport, medicine, military, etc. The dominant part consists of research of algorithms not only for low-level, but also high-level description of image data, digital filtering, content analysis by MPEG-7 descriptors, image data classification, editing detection, image and video segmentation, videoconcealment, etc. The laboratory is equipped with 2D sensing and projection technology for transport, web and industry, 16-core HeavyHorse workstations, SW, etc.
The laboratory of applied research and prototype solutions of electronic systems is located in room BD317. In this part of the laboratory, research and development is focused on the development of applied electronics in areas such as medicine, military, ICT equipment, etc. The dominant part consists of intelligent textile systems for measuring human biological parameters (ECG, muscle activity, heart rate, etc.) as well as On Board Unit systems for monitoring the structural condition of aircraft and helicopters. The laboratory is equipped with complete technology from LPKF for Rapid Protyping (design, production, assembly and testing) to 8-layer PCBs with SMD components (Eagle v6, ProtoMat S103, MultiPress S, Minicontact RS, ProtoPlace S, ProtoFlow E), various processor design boards with peripherals (Freescale, Virtex, Atmel, etc.), various state-of-the-art measurement technology and secure 8TB data storage in RAID mode.
The 3D Modeling and 3D Printing Laboratory is located in the CO shelter, the NMS 89 and NMS90 rooms in the premises of the UNIZA catering facility and is part of the AMT (Studio of Multimedia Creation). In this part of the laboratory, research and development is focused on the field of virtual reality, especially in areas such as the web, medicine, transport, etc. The dominant part consists of research of algorithms for stereovision, modeling of 3D scenes and objects (CAD SW, scanner, video data), recognition of 3D faces, classification of 3D objects, modeling of 3D traffic flow, diagnostics and treatment of oncological findings. In addition to creating models, the models designed in the laboratory can also be printed. The

laboratory is equipped with 3D sensing, projection and printing technology from ZCorp (ZScanner 700/Creaform 3D Scanner, Z650 3D printer), a 32-core HeavyHorse workstation, SW, etc. The following subjects are taught: 3D application development and 3D virtualization.

The GRAPHIC *lab* is located in room BD334, where there are 11 workstations, 4 of which are equipped with Wacom graphics tablets. On the secondary monitors of student computers, it is possible to monitor the desktop of the teacher's computer. This desktop can also be displayed on an LCD TV and projector. This system is used to teach Adobe Creative Cloud, Maxon Cinema 4D, Blender3D, Autodesk 3DsMax, Autodesk Fusion360, Unity3D, Gimp, Inkscape, Matlab, etc. With its hardware and software equipment, the laboratory supports teaching in the field of audio-visual content creation, 2D and 3D computer graphics, digital image composition, development of 2D/3D applications and mobile applications, as well as digital image processing. In this classroom, the subjects Computer Graphics 1, Computer Graphics 2, Computer Graphics 3, Creative Computer Graphics, Editing Composition, Effects Editing of Video Signals, Scripting in Multimedia Applications and 3D Application Development are taught.

The Laboratory of Computer Vision, Virtual Reality and Game Development (GAME *lab*) is aimed at supporting the education of students in the Multimedia Technologies study program. It combines the programming and graphic parts into a unique whole through the design and implementation of games. The laboratory teaches subjects focused on game design, development of 3D applications with a focus on virtual and augmented reality, as well as computer vision. The laboratory was built at the beginning of 2020 and inaugurated on November 27, 2020. The funds for the technical and technological equipment of the laboratory were paid not only by the Department of KMIKT but mainly from the resources of the Interreg V-A Poland-Slovakia 2014-2020 program within the GAMEJAM PROJECT (GAME JAM - as a new didactic method. Improving the quality of education in the field of new technologies on the Polish-Slovak border). In this classroom, the subjects of game design, creation of mobile applications, digital image processing are taught.

IoT Lab (IOT *lab*) The IoT Lab (IOT lab) is located in a computer-equipped room BD333. The lab houses the hardware needed to create IoT projects, such as the NodeMCU development board, interconnect array, various sensors, and actuators. Mobile phones with the Android operating system are also available in the classroom for the development of mobile applications. The classroom is also equipped with 18 computers for students, mobile phones for application development, and multimedia and presentation equipment. The classroom teaches several subjects provided by the department, such as the Internet of Things, the creation of mobile applications, database systems in ICT, scripting languages in ICT and others. The capacity of the laboratory is 18 students.

The server room is located in BD301. It consists of a technological unit for the management of the departmental Ethernet network. It also houses data arrays, web and application servers, and the main computing node, which is implemented by a PowerEdge R740 server with a PowerEdge R740/R740XD motherboard, including 2 Intel Xeon Gold 6226R 2.9G, 16C/32T, 10.4GT/s, 22 M cache; 8x64GB RDIMM, 3200 MT/s; 8x2.4TB 10K RPM SAS 12Gbps; 4x960GB SSD SAS read intensive 12Gbps; Redundant power supply (1+1), 1600W; 1xnVidia Quadro RTX 8000 48GB, 250W, Broadcom 57416 2 10Gb Base-T + 5720 2 1Gb Base-T port, rNDC; Power Saving Dell Active Power Controller; RAID; Rack/tower APC Smart-UPS X 1500VA. There is additional HW as a computing server with a datastore platform for training deep learning networks based on nVidia technology. The basis is two Nvidia graphics cards, GeForce GTX 1080. Each card consists of 2560 CUDA cores and 8 GB of RAM. Other components are an Intel i5-8400 processor, 16 GB of RAM, a 256 GB system M.2 SSD and a 1 TB HDD for data storage. For NN development and research, Windows 10 is used as an operating system with the Anaconda environment and several libraries (Keras, Tensorflow, OpenCV, Pil, etc.).

The Laboratory of Artificial Intelligence and Cybernetics is located in the building of the University Science Park in room A0.07. It was created as part of a university initiative called LUIZA lab (Artificial Intelligence Laboratory at the University of Žilina), which covers university laboratories with research and educational activities in the field of artificial intelligence. There is a farm of 21 workstations (i7-11th gen, 16GB RAM, 500GB M.2 SSD, 2TB HDD) based on nVidia GPU RTX 3060 with more than 75,000 CUDA cores, 2x nVidia Jetson Nano, 2x nVidia Jetson, 2x nVidia Jetson, data storage, and various network and multimedia devices.

2. Laboratory of Acoustics, Audio Signal and Speech Processing (AUDIO lab)

AUDIO lab (BD308) is a research laboratory focused on basic and applied research in various areas of acoustics, speech signal processing and audio. The dominant part of the research is focused on the application of methods and algorithms of machine learning and artificial intelligence in semantic analysis of audio and speech, such as voice biometrics, emotion recognition from speech and music, detection of audio events, acoustic scene analysis, etc. In addition to computer technology, the laboratory is equipped with specialized sound and recording technology, microphones, state-of-the-art professional measurement technology: Nor131/140 sound analyzers with additional modules for detailed temporal and spectral analysis and calculation of acoustic qualitative parameters of the space, 128-channel Nor848 microphone array ("acoustic camera") with specialized software for locating sound sources in space, R&S UP350 audio analyzer for measurement electroacoustic parameters of analogue and digital audio technology, as well as other standard techniques for signal recording and low-frequency measurements. The laboratory also houses an experimental workplace for the synthesis and effect modification of musical signals equipped with two MIDI controllers and an analogue audio modular DOEPFER system.

The laboratory also serves partly to support the teaching of the following subjects: electroacoustics, spatial acoustics, digital sound processing, synthesis and effects editing of sound signals.

3. The Laboratory of Multimedia Technologies (LoMT) is focused on experimental activities in the field of creation, processing and evaluation of the technical quality of audiovisual productions and consists of two sub-laboratories:

- Studio of Multimedia Creation (CO cover).
- Multimedia Laboratory (BB321).

The Studio of Multimedia Creation (AMT) is located in the basement of the Catering Facility of the University of Žilina. Its technical environment allows for multi-camera recording and its online and offline processing, including export to various formats. The laboratory is equipped with the Tricaster quasi-virtual editing environment and the Matrox editing system. It is also equipped with computer technology that enables live broadcasting of multimedia data streams to several current platforms, such as Youtube, Facebook, etc., as well as two-point connection of broadcasting workplaces over a data network. The laboratory is complemented by a lighting park with controlled light sources. It includes an audio and dubbing studio enabling multi-channel sound recording with subsequent processing. In terms of measurement technology, the laboratory is equipped with a generator of measurement audiovisual signals, video oscilloscopes and vector analyzers for video and audio signals. In addition to the preparation and production of audiovisual files, the studio is focused on research in the field of image analysis in terms of the technical quality of multimedia signals.

The following subjects are taught at AMT: MT project, image technique and composition, studio technique, selected practical parts in electroacoustics, synthesis and effect modification of sound signals, introduction to multimedia creation, some practical parts in multimedia signal processing, bachelor's project in MT1, bachelor's project in MT2, project in MT1, project in MT2, diploma project in multimedia engineering 1, Diploma project in multimedia. Engineering 2.

The MULTIMEDIA *lab* is equipped with audio and video technology so that students have the opportunity to get acquainted with the basic tasks of processing audiovisual materials. It is equipped with a camera park, a mixing console, an on-line image editing workplace for video and audio processing, as well as application servers for processing audiovisual materials. In terms of measurement technology, it is equipped with a basic measuring park enabling the analysis and measurement of image and sound quality parameters. In the field of research, the laboratory focuses on the analysis and measurement of the quality of multimedia signals using objective and subjective methods.

In MULTIMEDIA lab, the following subjects are taught: image technique and composition, studio technique, introduction to multimedia creation, editing composition, bachelor's project from MT1, bachelor's project from MT2, project from specialization MT1, project from specialization MT2, diploma project in multimedia engineering 1, diploma project in multimedia engineering 2.

4. The Digital Communications Laboratory (LoDC) consists of 2 sub-laboratories:

- Laboratory of Digital Communications of Prof. František Kroutl (BD318).
- Networking Academy laboratory (BC204).

The Digital Communications Laboratory of Prof. František Kroutl (NET *lab*) is located in room BD318. It is primarily used to teach subjects in the field of information and communication technologies, network operation, VoIP, SDN, cloud technologies of ISDN networks and programming. The laboratory houses 21 computers for students and teachers, 2 computers for network traffic analysis, projection technology and network infrastructure. Each computer can be connected to a university, laboratory, or ISDN network, which allows for a variety of work on projects, laboratory exercises, or term papers.

There are also several routers in the laboratory, which are connected to the server room of the department, on which the departmental network runs. With the help of these devices, it is possible to demonstrate a realistically deployed network, show and analyze its operation.

This laboratory provides the following subjects: Bachelor's project in ICT 1, Bachelor's project in ICT 2, Diploma project in TRI 1, Diploma project in TRI, project in specialization, network design and operation, practical exercises in discrete signal processing and also practical exercises in digital sound processing, introduction to study in ICT, ICT scripting languages, Introduction to Signals and Systems, Information and Communication Technologies 1, Information and Communication Technologies 2, ICT Project, Software Defined Networks and Cloud Technologies, Elective Parts of Access Networks.

In addition to teaching, this laboratory is used for research in the field of network security in terms of sophisticated attacks on network components, as well as in the field of quality of service in networks (QoS, QoE), optical transmissions in terms of spectrum, dispersion and attenuation of optical fiber and access networks. Unique instruments include spectrum analyzers, reflectometer, network protocol analyzer, various network simulators, network traffic analyzers and algorithms for evaluating the quality of multimedia transmissions. The laboratory is equipped with an optical GPON access system, all components for the analysis of xDSL technologies and various types of communication terminals with connectivity to both private and public networks.

The Networking Academy laboratory (CISCO *lab*) is primarily designed to provide teaching of courses dealing with the issue of IP networks (computer networks 1, computer networks 2, bachelor project in ICT 1, bachelor project in ICT 2, diploma project in TRI 1, diploma project in TRI, project in specialization, communication technologies 4, elective parts in the subject access networks) within the network academic program – Cisco Networking Academy. The laboratory is equipped with 20 routers and 10 switches from Cisco and a VoIP system along with IP phones. It also includes the XEN virtualization server platform, on which virtual servers with Linux OS are operated. The laboratory also has basic equipment for providing connectivity via ADSL2+ and VDSL technologies. The software equipment of the laboratory includes protocol analyzers, packet generators and several types of servers and clients. The laboratory carries out partial research activities focused on the management and management of LAN and WAN networks, VoIP and verification of compatibility of Cisco and Mikrotik devices for various versions of Cisco IOS and MikroTik RouterOS operating systems.

5. The Mobile Communications Laboratory (LoMC) is made up of 2 sub-laboratories:

- Laboratory of Location Systems and Services (BD316).
- Laboratory of Radiocommunication Technologies (BD315).

The Location Systems and Services Laboratory is located in Room BD316 and is dedicated to researching localization algorithms and methods in heterogeneous wireless networks. The second part of the research is focused on the implementation of the achieved results into real localization systems that were implemented in this laboratory. Location systems can locate mobile terminals outside and inside buildings, thus being able to provide location services regardless of the environment. As part of the research, several interesting applications for positioning and navigating customers in these environments were implemented. The proposed solutions are implemented in intelligent transport systems. The laboratory is equipped with several development kits designed for development in the field of wireless networks and systems, e.g. sensor networks, RFID and GNSS systems. The laboratory includes a simulator of GNSS systems - GSS 6700 and a simulator of wi-fi networks for the needs of GSS5700 localization. The laboratory also houses a technique for the generation and analysis of DVB signals, which are used in the pedagogical process, specifically laboratory exercises are taught in the following subjects: wireless technology, radiocommunication systems and networks 1, radiocommunication systems and networks 2, bachelor's project in ICT 1, bachelor's project in ICT 2, diploma project in TRI 1, diploma project in TRI, project from the specialization, wireless technology, tele- and radio communications, elective parts from the subject Access Networks.

The Laboratory of Radiocommunication Technologies (RADIO *lab*) is located in rooms BD315. The educational part of the laboratory is focused on monitoring the activities of several types of radio communication networks, e.g. 2G and 3G MOBILE RADIO NETWORKS (GSM, GPRS, EDGE, UMTS, HSPA), non-public mobile networks (TETRA), personal radio networks (ZigBee), wireless WLAN networks (IEEE 802.11a,b,g,n). In addition to the above standards, the laboratory's hardware equipment allows it to receive and process images of NOAA weather satellites. Another direction of teaching in the laboratory is focused on modeling the propagation of radio waves indoors (Radioplan software, EDX) and subsequent comparison of the model with the actual signal propagation by hardware equipment (transmitter and receiver for the 900 and 1800 MHz bands) and outdoors (Radiolab, EDX, ICT Telecom software). The third direction of the teaching part is focused on the theory of radio communications, where the hardware and software platform of the TIMS system is used (teaching of subjects: propagation of electromagnetic waves and antennas, bachelor's project in ICT 1, bachelor's project in ICT 2, diploma project in TRI 1, diploma project in TRI, project in specialization). The hardware equipment of the research part of the laboratory allows for the design and construction of simpler Ad hoc networks and wireless mesh networks based on the IEEE 802.11a,b,g,n and IEEE 802.15.4 standards. Several high-end test devices are available to analyze these networks (Agilent N4010 Wi-Fi Tester, N9010 Signal Analyzer, and N5182 Signal Generator).

6. The Laboratory of Optical Communications (LoOC) is made up of 2 sub-laboratories:

- Laboratory of Optical Technologies (BD330).
- Laboratory of Measurement and Evaluation of Optical Signals (UVPB -1.04+VC Part).

Laboratory of Optical Technologies (OPTO *lab*) The Laboratory of Optical Technologies is located in the premises of the department (room BD 330), it serves primarily for students who deal with the issue of the physical layer of optical networks. Teaching takes place mainly through the VPI Photonic and RSoft simulation programs. The VPI program environment through numerical models of real optical and electronic components and thanks to its modular design allows for quick work and understanding of the discussed issues. RSoft software enables the analysis of optical integrated components. The laboratory teaches subjects provided by the department such as photonic communication systems, fiber optics, integrated optics and others. The capacity of the laboratory is 11 students.

The laboratory of measurement and evaluation of optical signals is located mainly in the premises of the University Science Park UNIZA (room UVPB -1.04). It is equipped with technology for measuring the characteristics of optical fibers and elements (e.g. attenuation, CD, PMD), it also allows the investigation of the properties of systems within the autonomous optical network and also the measurement of the properties of multi-state optical signals. The most important measurement technologies include: in the time domain, these are the Teledyne LeCroy LABMASTER 10-36ZI oscilloscope (35 GHz, 75 GS/s), the IQScope-RT Teledyne LeCroy (43 GHz, 150 GS/s, max. 640 Gb/s), in the spectral domain, these are OSA Yokogawa AQ6370C (600 - 1700 nm, max. 0.1 nm for the C band), Thorlabs OSA 203 (1100 - 2400 nm) and EXFO FTB 500 (CD measurement in the range of 1200 -1700 nm and PMD measurement in the range of 1260 - 1675 nm), in the field of polarization, the polarimeter Thorlabs PAX5720IR3 (1300-1700 nm), the polarization generator and analyzer General Photonics PSGA-101A (1510 - 1640 nm). Other measuring instruments and devices include an experimental optical DWDM system (4 wavelengths, 100 GHz), an experimental optical network (LWP fiber G.652.D, length approx. 950 km), SOP locker (1510 - 1640 nm), tunable lasers in standard telecommunication. band (Yenista (coherent source) and Thorlabs), optical detector 4 ch., optical breaker and welder (Fitel), Tektronix AWG7082C function generator (max. 3.2 GHz, el.), Rodhe and Schwartz R&S®FSU46 spectrum analyzer (20Hz - 45 GHz, el.). Another part is the technology enabling "Weighing in Motion" through FBG sensors built into the road, part of which is located in the premises of the UNIZA Science Centre, namely the iterrogator (BAM Infra) Safibra (2000 ud./s, 4 ch.), the iterrogator (BAM Infra) Safibra (1000 ud./s, 4 ch.). The sensor field consists of BAM Infra 2x36 + 2 FBG WIM sensors and an additional sensor field consists of 6 standard FBG sensors. There is also an HKVISION camera directed at the sensor field (for image recognition purposes).

7. The Laboratory of Analog Circuits and Systems (LoACS) is a grouping of scientific and teaching staff, doctoral students and students with common research goals in the field of analog signal processing, design and development of components in the low-frequency, high-frequency and microwave domains. The laboratory consists of 2 sub-laboratories:

- Laboratory of Analog Circuit Systems.
- Experimental laboratory.

The Analog Circuit Systems Laboratory (RF *lab*) is located in room BB319. This laboratory is designed primarily to provide practical teaching in the field of analog circuits and systems and also in the field of microcontroller programming. The instrumentation of the laboratory consists mainly of instruments operating in the low-frequency range, such as low-frequency generators, oscilloscopes, impedance analyzers, etc. The laboratory also includes equipment for the development and production of printed circuits for the low-frequency area. The software equipment of the laboratory consists of, among other things, means for programming microcontrollers. The laboratory is also used to solve the practical parts of diploma theses. The laboratory also houses computer technology for 20 students, where teaching is provided in the following subjects: scripting languages in ICT, object-oriented programming languages 1, object-oriented programming languages 2, bachelor's project in ICT 1, bachelor's project in ICT 2, diploma project in TRI 1, diploma project in TRI, project in specialization.

The experimental laboratory is located in room BD320. It is primarily focused on research and development in the field of technology and circuits of high and very high frequencies. The laboratory equipment consists of modern instrumentation. These include, for example, the two-port network vector analyzer Rhode&Schwartz ZVL, enabling measurements in the range up to 6 GHz, the LeCroy 104MXs digital oscilloscope enabling measurements up to 1 GHz, the Hewlett-Packard four-port vector network analyzer, enabling four-port measurements up to 3 GHz, a programmable generator, an LCR bridge, and the like. The laboratory also includes software and hardware resources used for the development and production of RF components using planar technology, such as microwave filters, microwave amplifiers, microwave antennas, and the like. The laboratory is primarily used for the research of doctoral students, who carry out practical experiments for their dissertations in the laboratory.

8. The Health Applications Laboratory (LoHA) is located in the University Science Park building in room A1.11. In this part of the laboratory, research and development is focused on the research of methods for 3D reconstruction and 3D registration of CT/MRI medical data, smart textiles and wearable electronics. The dominant part of the laboratory consists of technology from LPKF focused on the design, production, assembly and testing of up to 8-layer PCBs with SMD components, professional soldering stations (WXD 2020, WHP 1000, WR3000M), extraction systems designed for use in the design, production and repair of electronics, HAMEG measurement and testing technology (oscilloscopes, spectrum analyzers, module systems, etc.), programmable multi-needle embroidery machine BARUDAN BEXT-S1501 CII and professional color textile printer EPSON SC F-2000. The laboratory is also equipped with a FLIR T440 thermal camera and an Objet24 3D photopolymer printer.

Classroom marking	**Classroom equipment**
BB319 (RF lab)	*Program-controlled signal generators, calibrated antennas, HP 853A spectru generators, HAMEH HM 203-7/HM205-3/HM 303 oscilloscopes, GHC 8010H intensity meters, multimeters, logic analyzer, stabilized power supplies, meas set with monitor and projection technology*
BB321 (MULTIMEDIA lab)	*BLACKMAGIC CINEMA 4K camera, 3x SONY camera, photo tripods, video hea editing unit, microphones, DN-300 HDV datavideo, lighting technology, 10xN LUMI/PENTAX camera, 8x PANASONIC camera, SONY HVR-M15E/SONY HVR audio recorder, microports, devices for digitizing old audio and video recordi monitors and projection equipment*
BC204 (CISCO lab)	*10x Cisco ISR 2801 router with Cisco HWIC 2A/S card installed, 10x Cisco ISR Catalyst 2960 24TT-L switch, 3x Cisco Catalyst 3560 switch, 1x ZyXEL ADSL DS monitor and projection technology*
BC304 (Seminar Classroom)	*Seminar room for 40 students with a computer set with a monitor, 5+1 audio*
BD308 (Audiolab)	*Nor131, Nor140 sound analyzers with additional modules for spectral analys qualitative parameters of space, 128 channel microphone array ("acoustic ca sound sources in space, R&S UP350 audio analyzer, 3pcs NF oscilloscopes GO generators, counter, TECHNICS equalizer, multimeters, HM 8040-3 power su equipment (Holosonics Audiospotlight parametric speaker system, 2 pcs Pan Panphonics AA160 amplifiers, Norsonic Nor. 280 amplifier), SW STATGRAPHI modular system DOEPFER, 8x computer set with monitor and projection tech*

	BD315 (RADIO lab), SW	*SAT antenna with converter, disconic antenna AX-24B, receiver WR-1550e, 2x radi analyzer ZENA, meteorological SAT receiver WESACOM-B, DS-MESH-02, oscilloscop system TIMS, SW modules TIMS, vector signal analyzer AGILENT 89601A with SW, digital oscilloscopes, SW equipment – MATLAB, 11x SW RADIOLAB 3.0, spectrum monitor and projection technology*
	BD316 (RADIO lab), HW	*Parabolic antennas with converters, communication devices SF-WRL-13001 and M TIMS-449OFDM, SW for simulation of radio networks, measurement system for IE accessories, development system for wireless LBS, mobile laboratory for location s analyzer, spectrum analyzer GHM 5530, WINRADIO WR G35 E, BREEZEMAX teleco analyzers of RF signals, DVB-T generator and analyzer, 8x computer set with moni*
	BD318 (NET lab)	*SDH analyzer ME352OA, 4x 1GB data switch, 10x OPTIPOINT 500 economy phone, 410/PROFISET 30/PROFISET 70/BASIC 300 phones, 2x 43" TV for displaying netwo SW NETDISTURB-IMPAIRMENT, SW HAMMER CALL ANALYZER, ISDN analyzer, HA tester, MINI DSLAMIES 1000AC, WS-C2960/LS-SRW2024 network infrastructure, s analyzer, GPON optical access system, 2x PC for network traffic analysis, 21x comp equipment – MATLAB, GNS3, Visual Studio (C++ and MFC libraries), Android Studio projection technology*
	BD328 (GAME lab)	*XYZ DA VINCI 3D printer, PRUSA I3 MK3 3D printer, PRUSA SL 1 KIT+ CURING/WAS STARTER KIT wireless glasses, 3x laptop with accessories, 3x SAMSUNG GALAXY N 1x OCULUS QUEST 2 glasses, 2x MICROSOFT X-BOX SERIE X/RRT game console, 2x wheel with pedals, aviation joystick with pedals, 11x gaming computer set with nV MATLAB, UNITY, Anaconda/Spyder IDE and projection technology*
	BD329 (Seminar Classroom)	*Seminar room for 25 listeners with computer set with monitor, 5+1 audio system a*
	BD330 (OPTO lab)	*11x computer set with monitor, with SW equipment – MATLAB, VPI, RSoft and pro*
	BD333 (IOT lab)	*12x mobile phone IGET BLACKVIEW GBV5500 PLUS, mobile phone MOTO G 5G PLU interconnection arrays, sensors and actuators for IoT, 18x computer set (Windows ADOBE PHOTOSHOP CS4, COREL DRAW GS X4, Visual Studio, Android Studio, Pyth*
	BD334 (GRAPHIC lab)	*4x WACOM CINTIQ 22 HD graphics tablet, 11x graphics computer set with nVIDIA ADOBE CREATIVE CLOUD, BLENDER, KRITA, Visual studio, Spyder IDE/Anaconda, U*
	NMS 89/90 (3D lab)	*Z650 3D Printer, EPSON 3D Projector, Z700 3D Scanner with SW, Samsung UE55H8 DAVDZ740 5+1 Home Theater, P4 3.2GHz Server, HP Z640 Workstation with 4 Mo*
	NMS 91/95/98 (AMT)	*Studio lights/light bar with diffuser surfaces and electronic control BEHRINGER, m PANARAY, 4x TV TELEFUNKEN T40FX275DLBP/LG 42LE2R, digital video console DA Z1E/AG-HCK10/SONY HDR-HC9E, image editing workplace with SW, 3D camera PA PD1, 2x Datavideo TLM 702/TLM-404, PRO 41 DYN/P5 S LIVE/SM57LCE/ECM-310 Electronic Drums, Various Speaker Systems, STUDIO LIVE 16.4.2 PRESONUS Digital Studio, SW ADOBE AUDITION 3.0/PREMIERE PRO CS4, SW SOUNDBOOTH CS4, Net TS879 Network Storage, 6x Monitor & Laptops*
	A 0.07 (UVP)	*Presentation and multimedia technology WIFI speakers/headsets JABRA, WACOM data storage, 2x Jetson Nano development KIT, 2x Jetson Xavier AGX development computer set with nVIDIA GPU RTX 3060, monitor, with SW equipment – MATLAB,*
b	**Characteristics of the information provision of the study programme (access to study literature according to course information sheets), access to information databases and other information sources, information technologies, etc.**	
	At the university level, the processes, procedures and structures are defined by Directive No. 218 - Directive on the collection, processing, analysis and evaluation of information to support the management of study programmes: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2	

The basic information system supporting the process of education and teaching at the University of Žilina (ŽU) is the Academic Information and Education System (AIVS). AIVS is available to students from the university domain and from the Internet, while the university WiFi network supports EDUROAM.
Currently, AIVS covers the entire life cycle of a student of a study program, from the submission of the application to the state exam and activities related to the completion of studies at the university. AIVS supports the management of the study agenda at faculties and other parts of the university at all levels, forms and types of higher education. Within each study programme, it is used to register applicants, students and graduates, to monitor study results, to support the credit system of study in accordance with Section 62 of Act 131/2002 Coll., to support the creation of a schedule, etc. It supports the generation of ECTS information packages (Section 20 (1) (e), activities related to the completion of studies (certificates, diplomas), as well as the processing of diploma supplements (Section 68 (1) (c).

AIVS consists of several subsystems:
a) Subsystem "Admission Procedure" – enables the processing of the application (electronic and classic), results and their evaluation, communication with the applicant (invitations, announcements and statements), processing of statistics for the Ministry of Education.

(b) Education subsystem – consisting of the following modules:
- Register of students;
- study administration (study programmes, study plans, course information sheets),
- enrolment in studies,
- preparation of the teaching schedule and management of resources (classrooms, technical equipment),
- administration of exams (announcing exam dates, registering for exams),
- course of study - recording of study results, continuous evaluation of study results (Internal Directive No. 100 Rules for Continuous Evaluation of the Quality of Education Provided at the University of Žilina),
- Study stays (mobility) - data are part of the Student Register and are exported to the Central Student Register

c) Subsystem "Conclusion of Study" – consists of the modules "Final Theses" and "State Examinations".
The "Theses" module is aimed at supporting the following activities:
- assignment of topics of final theses by the department or teacher,
- selection of the topic of the final thesis by the student,
- approval and confirmation of the topic and the student by the department,
- export of basic data from AIVS to the local repository of the information system of final theses - EZAP (internal directive No. 103 on final theses),
- handing over the finished thesis to the EZAP at the ŽU,
- import of work status and compliance log data from EZAP.

The "State Examinations" module allows:
- the formation of state exam commissions by the department,
- definition of state exam subjects,
- enrolment in state exam subjects - graduating students,
- distribution of students by days and commissions,
- Record of exam results for individual state exam subjects, record of final thesis evaluation, on-line printing of the State Exam Record (to be signed by the State Exam Committee),
- Diploma printing - carried out in study departments.

For the preparation of the work, its submission to the EZAP and subsequent steps, the internal ŽU Directive No. 87 applies.

The "UniApps" application allows you to access AIVS data and services from mobile devices with Android OS, in accordance with the university's concept of mobile technology deployment. The university encourages students to use their own mobile devices. UniApps provides access to information for full-time students at the 1st and 2nd level. The following functionalities are currently available:
- schedule,
- User profile,
- exam dates,
- registration for exams,
- test results.

E-learning:

	At the university, e-Education is built on the basis of LMS Moodle. The organization of the courses is based on controlled study with the support of information and communication technologies in close connection with AIVS. E-learning has been used at the university since the academic year 2004/2005.
c	**Characteristics and scope of distance learning applied in the study programme with assignment to subjects. Accesses, manuals of e-learning portals. Procedures for the transition from full-time to distance learning.**
	Doctoral studies are carried out on an individual basis.
d	**Partners of the submitter in the provision of educational activities of the study programme and the characteristics of their participation.**
	Selection of partners: • Siemens Mobility, s.r.o, • Ipsoft, s.r.o., • TES Media, s.r.o, • Communications Research Institute, n. o., • NXP Semiconductors Czech Republic, s.r.o., • Brainit, s.r.o., • Scheidt & Bachmann Slovensko s.r.o., • Regulatory Office for Network Industries. Characteristics of participation: cooperation in scientific and research activities, participation in education – professional lectures, opportunities for professional practice and internships, etc. Faculty-level partners: https://feit.uniza.sk/spolupraca-s-priemyslom/ University-level partners: https://uniza.sk/index.php# in the "researchers and partners" tab.
e	**Characteristics of the possibilities of social, sports, cultural, spiritual and social activities**.
	At the university level, the possibilities of social, sporting, cultural, spiritual and social activities are described by Directive No. 217: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 Information about the possibilities of social, sports, cultural and spiritual activities of UNIZA students: https://uniza.sk/index.php# Especially in the "Students" tab Initial and summary information about all the basic facts necessary for a full-fledged academic life is provided to students in the form of an information manual (distributed on paper and electronically). Students have the opportunity to participate in various interest or self-governing organizations at UNIZA – Gama Club, Council of Accommodated Students Veľký Diel, Council of Accommodated Students of Hlina, Internet Club, Student Television í-Téčko, Club of Friends of Railways UNIZA, Dormitory Radios RAPEŠ and Radio X, Erasmus Student Network (ESN), University Club of Firefighting Sport UNIZA, OMNIA Choir, Folklore Ensemble STAVBÁR, University Pastoral Center at the University of Žilina**.** Sports activities are offered to students by the Institute of Physical Education - teaching the subject of physical education (23 sports), extracurricular sports activities, outdoor activities (rafting, cycling, skiing, windsurfing,...), organization of university competitions, regeneration (sauna). There are several sports facilities - FIT-CLUB HLINYV (Fitness center, aerobic hall, squash court, multipurpose field, regeneration complex, martial arts gym, climbing wall), FIT-CLUB VEĽKÝ DIEL (Fitness center, multipurpose hall, ricochet field, T18 gym Veľký Diel, gym Májová street, tennis courts, football grass field, athletic track). For those interested in performance sports, there are sections of the ACADEMIC UNIZA sports club. The Institute of Physical Education regularly organizes one-day and multi-day sports rafting courses (Soča, Salza, Váh, Hron, Belá), cycling stays associated with hiking, as well as winter ski courses (Low Tatras, Alps).

	The University Library provides a number of library services (lending services, interlibrary loan services, international lending services, bibliographic and information services, information consultancy, COPY centre, HandLab, 3D printing and others). The university operates EDIS – the UNIZA publishing house, offering the sale of study literature, promotional items, copying services, printing and binding of final theses, etc. Students obtain a student card, which entitles them to use several services such as an access system, catering system, external services outside the university (TRANSCARD – especially bus transport), university library, accommodation facility, LDAP account allowing access to information systems. On the university campus, within which the SP is provided, there are two accommodation facilities – Veľký Diel and Hliny, on the grounds of which there are sports, cultural, information and other interest facilities, associations and clubs and student organizations organized by or for students. Catering - students have the opportunity to use the services offered by the canteen, which provides meals in its 7 centers. Meals can be taken using a student card (student card. News about life at the university and especially at the faculty are provided to SP students through a special web portal FEIT City. At the faculty level, there are other options, such as (in case of a favorable epidemic situation) FEIT Ball, FEIT Sports Day, Christmas Punch with the Dean, etc.
f	**Possibilities and conditions for the participation of students in the study programme in mobilities and traineeships (with contact details), instructions for application, rules for the recognition of this education.**
	At the university level, the processes, procedures and structures are defined by Directive No. 219 Mobility of Students and Staff of the University of Žilina Abroad. https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 An Erasmus+ study stay or internship is already a natural part of studying at UNIZA. The priority of the UNIZA management is to send every student on Erasmus+ mobility, at least once during their university studies. Current and future FEIT students have the opportunity to study at approximately 70 higher education institutions with which the faculty has concluded a cooperation agreement, as well as to complete practical internships in companies and companies within the program countries. At the faculty level, detailed information for students is provided on the website: https://feit.uniza.sk/studenti/mobilita-erasmus-2/ contact person: Mgr.Silvia Pirníková, e-mail: silvia.pirnikova@uniza.sk At the level of the study programme, the coordinator is: prof. Ing. Peter Počta, PhD., e-mail: peter.pocta@ uniza.sk

9.	Required Abilities and Prerequisites of the Applicant for the Study Programme
a	**Required abilities and prerequisites required for admission to study**
	At the university level, the processes, procedures and structures are defined by Directive 206 – Principles and Rules of Admission to Study at UNIZA: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 At the faculty level, the Academic Senate of the faculty has approved the Principles and Rules of Admission, which describes in detail all the required abilities and prerequisites necessary for admission to study of individual study programs at FEIT, including the study program Electrical Technology and Materials, and are available at: https://feit.uniza.sk/studenti/doktorandske-studium/ The application is submitted for a specific study programme and the applicant applies for a specific topic of the dissertation, which are published on the faculty website. If you are interested in more than one study programme, it is necessary to submit an application for each study programme separately with the payment of the relevant admission fee. Applicants fill in the electronic application form via the FEIT website (http://feit.uniza.sk/ in the Applicants section) or the UNIZA https://vzdelavanie.uniza.sk/prijimacky/index.php website. ***Submission of a duly completed application within the set deadline and payment of the admission fee within the specified deadline are a condition for the inclusion of the applicant in the admission procedure.***

	The basic condition for admission to study in the third level of higher education at the Faculty of Electrical Engineering and Information Technology of the University of Žilina is the acquisition of a second-level university degree (Act on Higher Education Institutions in the Same or Related Study Programme). In the case of a foreign applicant or student who has completed his/her studies abroad, he/she shall submit to the application for higher education at the latest for enrolment in study, a decision on the recognition of the document on completion of second-level higher education by the relevant institution in the Slovak Republic, or apply to UNIZA for the recognition of the document on education.
b	**Admission Procedures**
	At the university level, the processes, procedures and structures are defined by Directive 206 – Principles and Rules of Admission to Study at UNIZA: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 At the faculty level, the Academic Senate of the faculty has approved the Principles and Rules of Admission, which describes in detail all the required abilities and prerequisites necessary for admission to study individual study programs at FEIT, including the study program of telecommunications, and are available at: https://feit.uniza.sk/studenti/doktorandske-studium/ The application is submitted for a specific study programme and the applicant applies for a specific topic of the dissertation, which is published on the faculty website: https://feit.uniza.sk/studenti/doktorandske-studium/ The selection of applicants will take place in the form of an entrance examination, in which the applicants will attend in person. Applicants are invited to the entrance examination in writing with information about its course. The applicant is obliged to present an identity card during the entrance examination. The entrance examination takes place orally in the form of a debate. At the request of an applicant with special needs and based on the evaluation of his/her specific needs, the Dean will determine the form of the entrance examination and the manner of its conduct taking into account his/her specific needs and in accordance with Directive No. 198 Support for Applicants for Studies and Students with Special Needs at the University of Žilina. During the entrance examination, the following are assessed: a) the results of previous studies, b) language maturity, c) the applicant's previous publication activity, d) other activities of the applicant in the given field (ŠVOS, practice, professional internships,...), e) prerequisites for independent scientific work of the applicant in the field of the study programme in the form of a debate on the selected topic. The language maturity of the applicant and the applicant's overview in the given area of focus of the dissertation are evaluated by the qualification level A – excellent to FX – insufficiently. If an applicant obtains an FX rating in at least one of these evaluated areas – insufficiently, he or she has failed the entrance exam. Based on the results from all the assessed areas, the admissions committee compiles a ranking of successful applicants, which is recorded in the Minutes of the Admissions Procedure, which is archived at the Study Department of the Faculty. The final decision on admission/non-admission to doctoral studies in a given study programme is issued by the Dean of the Faculty on the basis of the results of the admission procedure, taking into account the order determined by the admissions committee and the capacity possibilities of the relevant study programme.
c	**Results of the admission procedure for the last period**
	Listed in the documents "Report on the evaluation of the quality of education at the FEIT faculty level" for individual academic years *https://www.uniza.sk/index.php/component/content/article/4273-sprava-o-hodnoteni-kvality-vzdelavania-na-urovni-fakulty-feit?catid=2:uncategorised&Itemid=101* a "FEIT Annual Reports" for each year, available: https://feit.uniza.sk/fakulta/uradna-tabula/

10.	**Feedback on the quality of education provided**

a	**Procedures for monitoring and evaluating students' opinions on the quality of the study programme.**
	Regulated by Directive No. 223 Monitoring and periodic evaluation of study programmes: https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2 Each academic year, the student has the right to comment on the quality of teaching, through *a questionnaire on the quality of the provided subject and on the quality* of the teacher (for subjects in the winter and summer semesters), through *a questionnaire on the quality of the study programme (at each level of study),* through a *questionnaire for students with special needs,* through *a questionnaire on the quality of the admission procedure.* All the above surveys, as well as data collection, are carried out in the form of IS e-learning. The process of monitoring and periodic evaluation of study programmes is carried out at UNIZA at three levels: a) at the level of the Study Programme Council; b) at the level of faculties and institutes of UNIZA; c) at the level of the UNIZA Accreditation Board. Monitoring of the study programme in the conditions of UNIZA includes continuous monitoring and review of the learning process in the relevant study programme, implementation of planned activities aimed at improving the quality of education, achieving learning outcomes and goals, compliance with relevant legislation and other legal regulations and guidelines. The following are involved in the monitoring and periodic evaluation of the study programme: (a) internal stakeholders: i. UNIZA students through feedback at subject level and at the level of study programmes implemented on an annual basis; ii. teachers through regular annual evaluation of subjects and feedback mapping their perception of the teaching process on a three-year basis; (b) external stakeholders: i. UNIZA graduates through feedback mapping their entry into the labour market and adaptation in employment carried out on a three-year basis; ii. employers through feedback mapping the readiness of SP graduates for practice carried out on a three-year basis. ***Feedback from students:*** 1. Feedback on the admission procedure and the process of adaptation to higher education is obtained through an anonymous questionnaire intended for all first-year students at all levels of study. 2. Feedback on individual subjects is obtained through a regular semester anonymous questionnaire intended for all students of all levels of education. It maps the educational process to the teacher/subject level, the teacher's approach, the possibility of achieving learning outcomes and their connection with teaching and assessment methods, the specifics of the subject. In the case of several teachers providing a subject (e.g. lecture, exercise, etc.), one questionnaire is constructed per subject with a separate evaluation of individual teachers. 3. Feedback at the level of the study programme is obtained through a regular anonymous questionnaire intended for students of the final years of all levels of education. It is used to map the entire study program, including the content of education, the organization of education, and access to counseling and other services during study. Students are invited to fill in questionnaires in the Feedback on the Admission Procedure and Feedback on Individual Subjects or professional guarantors of the study programme in the Feedback at the level of the study programme. The application for completion shall include information on the place of publication of the previous results of the monitoring and periodic evaluation. The results of the feedback on the education provided and the identified opportunities for improvement are subsequently analysed, evaluated and are the basis for the creation of the Study Programme Evaluation Report within the periodic evaluation of the study programme by the Study Programme Council. ***Alumni feedback:*** Feedback from graduates of study programmes maps the effect and impact of completed higher education at the relevant level. The anonymous questionnaire is intended for all graduates who have completed their studies in a given study programme in the last three years. The general set of questions consists of items organized at least into topics: a) Sphere of application;

	(b) Transition to employment; c) Relevance of the study in relation to employment, subject composition, comparison of knowledge, skills and competences acquired during the study and required by practice; d) The need for further education. Graduates are asked to fill out a questionnaire through the Study Programme Council in cooperation with the Dean of the Faculty. The application shall include information on the place of publication of previous monitoring and periodic evaluation results. The guarantor of the study programme analyses the data from the feedback obtained, identifies possibilities and suggestions for strengthening strengths, eliminating identified weaknesses and possible threats. The results of the feedback on the implemented education and the identified opportunities for improvement are subsequently analysed, evaluated by the Study Programme Council and are the basis for the creation of the Study Programme Evaluation Report within the periodic evaluation of the study programme by the Study Programme Board.
b	**Results of student feedback and related measures to improve the quality of the study programme**
	The results of student feedback are evaluated through the indicators of the UNIZA Internal Quality Assurance System: Uscl10 - Student Satisfaction Rate with Subject Teaching – Comprehensive Uscl11 – Student Satisfaction Rate with Teaching Quality (Teaching Methods and Assessment Methods) Uscl12 - Student Satisfaction Rate with Teacher Quality (Access, Preparation) USCL13 – Student Satisfaction Rate with Specific Needs USCL16 - Availability of Resources Planned in Course Fact Sheets Uvzdal 2 - Degree of satisfaction with adaptation to university studies UVZDEL9 - Academic Fraud Prevention Rate Uscl17 - Degree of satisfaction with the preparation and course of the internship/internship Uscl20 - Degree of satisfaction of students in their final years with the quality of the study program Uscl21 - Degree of Consistency and Impact of Education Output 2 - Degree of readiness of graduates for practice in terms of competences (Indicator evaluated from the Alumni Survey, which takes place every 3 years) Output 1- Employability rate of graduates of the study programme (Indicator evaluated by the Ministry of Education, Science, Research and Sport for the calendar year in which AR started) Output 3 - Employers' satisfaction with the educational outcomes of the study programme (Indicator evaluated from a survey among employers every 3 years) These indicators are evaluated in annual evaluation reports at degree programme, faculty and university level. Individual evaluation reports are discussed and in the case of significant deficiencies, consequences are drawn at the level of the Study Programme Board, at the level of the Dean's College and at the level of the UNIZA Accreditation Council. https://www.uniza.sk/index.php/hodnotiace-spravy

11.	**Links to other relevant internal regulations and information related to the study or the student of the study programme** (e.g. study guide, accommodation rules, fees directive, student loan guidelines, etc.).
Prescription Name	**Link**
Relevant internal regulations of UNIZA	https://www.uniza.sk/index.php/univerzita/vseobecne-informacie/uradna-tabula
Internal regulations of VSK UNIZA	https://uniza.sk/index.php?option=com_content&view=article&id=4131:smernice-pre-vnutorny-system-kvality-uniza-2&catid=2