UNIVERSITY OF ŽILINA
Faculty of Mechanical Engineering

FACULTY OF MECHANICAL ENGINEERING

DOCTORAL DEGREE STUDY

CONTACT

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ACCREDITED STUDY PROGRAMMES OFFERED FOR THE ACADEMIC YEAR 2019/2020

DOCTORAL DEGREE STUDY PROGRAMMES	
FULL-TIME STUDY LENGTH OF STUDY 3 YEARS	**PART-TIME STUDY **** LENGTH OF STUDY 4 YEARS
Automated Production Systems *	Automated Production Systems *
Mechanical Engineering Technologies *	Mechanical Engineering Technologies *
Technical Materials*	Technical Materials*
Machine Parts and Mechanisms *	Machine Parts and Mechanisms *
Computer Modelling and Machine Mechanics *	Computer Modelling and Machine Mechanics *
Energy Machines and Equipment *	Energy Machines and Equipment *
Rail Vehicles *	Rail Vehicles *
Industrial Engineering and Management *	Industrial Engineering and Management *
** study programme is also accredited in the English language* *** standard tuition fee for part-time study programmes is 1 000 € for an academic year*	

Detailed information on particular study programmes
- syllabus,
- course information sheets

can be found at http://vzdelavanie.uniza.sk/vzdelavanie/plany.php.

EXPECTED NUMBER OF ACCEPTED APPLICANTS TO THE FIRST YEAR

DOCTORAL DEGREE STUDY		
STUDY PROGRAM / FIELD OF STUDY	**PLANNED CAPACITY**	
	FULL-TIME	**PART-TIME**
Automated Production Systems / Mechanical Engineering Technologies and Materials	2	1
Mechanical Engineering Technologies / Mechanical Engineering Technologies and Materials	6	4
Technical Materials / Mechanical Engineering Technologies and Materials	2	1
Machine Parts and Mechanisms / Machine Parts and Mechanisms	3	2
Computer Modelling and Machine Mechanics / Machine Parts and Machinery	3	1
Energy Machines and Equipment / Energy Machines and Equipment	3	2
Rail Vehicles / Motor Vehicles, Rail Vehicles, Ships, Aircraft	2	1
Industrial Engineering and Management / Industrial Engineering	4	3
TOTAL NUMBER	25	15

TERMS AND CONDITIONS OF ADMISSION

1. **The fundamental prerequisite** of being accepted to the doctoral study (the third degree study programme) is the full completion of the second degree of the university study (Higher Education Act, n. 131/2002 Coll.).
2. **Health certificates** – the faculty does not require any health certificates and accepts all the applications without health certificates for all degrees of the university studies.

FORMS OF ADMISSION

1. No entrance exams

- all the applicants have to pass the selection procedure.

2. Selection Procedure

- selection procedure for the doctoral degree study is carried out in a form of an interview with each of the applicants individually in front of the selection committee.

Rules of Selection Procedure

- the interview consists of two parts: the first part maps the applicants' knowledge of the professional field associated with the selected topic of their doctoral studies; in the second part the applicants' knowledge of foreign languages and their assumptions for independent scientific work are being verified. The order of the applicants is drawn up by the selection committee in secret ballot.

ADMISSION OF FOREIGN STUDENTS

The same terms and conditions of admission are applicable as for the applicants from abroad as for the applicants from Slovakia.
Foreign students who study in a foreign language (i.e. not Slovak), pay the tuition fee as stated in § 92 Subsection 8 (Higher Education Act). The tuition fee is specified by the UNIZA directive for the respective academic year and can be found on the university website.
Students from abroad who study in the Slovak language do not have to pay the tuition fee. Applicants from the Czech Republic can use the application form available in the Czech Republic. Applicants who do not actively speak Slovak or Czech are required to attend the language training. (It is possible to attend the Slovak for Foreigners courses at UNIZA).
For foreign applicants who were accepted on the basis of intergovernmental agreements, bilateral agreements or Slovak government grants, terms and conditions stated in respective documents are applicable.

HOW TO APPLY

Application forms are to be submitted for individual study programmes.
In case the applicant is interested in more study programmes, it is necessary to apply for each one individually, including payment of the respective admission procedure fees.

Applicants have to fill in the form Prihláška na vysokoškolské štúdium - 3. Stupeň or they can also use an electronic application form that can be found on the university website: https://vzdelavanie.uniza.sk/prijimacky/index.php or on the education portal: https:// prihlaskavs.sk/sk/.
Even in case of electronic application form, it is required to print it, sign it, enclose other required documents including the proof of payment of the fee and send it to the address of the Faculty of Mechanical Engineering UNIZA within the stipulated deadlines.
Incomplete application form or application form sent after the deadline will not be accepted.
In the absence or failure of entrance exams, the faculty does not refund the admission fee.
If an applicant wants to take part in entrance exams at more faculties of UNIZA, the application forms have to be sent separately to each faculty and the respective admission procedure fees paid separately to each faculty.

Enclosures for the doctoral degree programmes (to be sent with application forms):
- Curriculum Vitae,
- proof of payment of the admission fee,
- copies of Diplomas.

Admission fee:

Send **20 €** to:	Žilinská univerzita v Žiline, Univerzitná 1, 010 26 Žilina	
	Bank:	Štátna pokladnica
	IBAN:	SK34 8180 0000 0070 0026 9861
	constant symbol:	0308
	variable symbol:	10233 - doctoral study
Payment method:	payment can be paid by bank transfer or postal order to the account above.	
Proof of payment:	proof of payment is to be sent to the Faculty with the application form.	

With payment of the admission fee from the EU member states, the EES countries, territories that are considered a part of the EU (Treaty of Rome, Section 299) and SEPA countries, it is necessary to use BIC: **SPSRSKBAXXX**, IBAN: **SK34 8180 0000 0070 0026 9861**.

Tuition fees - in accordance with the Higher Education Act, information about the amount of tuition for the respective academic year will be announced on the website of the University of Žilina.

USEFUL DATES

Open Day	Deadline for submitting the application form	Entrance exams
November, 21, 2018 January, 29, 2019	until May, 31, 2019	June, 24 – 28, 2019

ACCOMMODATION

Accommodation facilities of the University of Žilina provide accommodation according to their capacity and distance between the student's residence and the main location of the university.
Student accommodation facilities cost approx.: **70 € - 140 € per month.**

BOARD

Students can use services of catering facilities of the University of Žilina in Žilina. **Price for food: 9 € per day.**

SCHOLARSHIPS

Full time students of the doctoral degree study programmes are granted a scholarship pursuant to Higher Education Act, n. 131/2002 Coll. (On universities and on amendments to certain laws), §54 Subsection 18.

GRADUATE PROSPECTS

DOCTORAL STUDY PROGRAMMES

AUTOMATED PRODUCTION SYSTEMS
(Field of study 5.2.7 Mechanical Engineering Technologies and Materials)
Graduates of the third degree study programme have acquired the knowledge and skills necessary for research and development of automation in mechanical engineering. They have acquired theoretical knowledge of technological processes and possibilities of their application in engineering enterprises, taking into account the qualitative, technical-economic and ecological aspects. They are ready to solve the most demanding tasks of technical practice. Graduates of doctoral degree study are employable in research and development departments of production companies, at top managerial positions, in managing production departments with sophisticated production technology, at Slovak Academy of Sciences and technical universities. They are also employable in consultancy companies and organisations that require a higher degree of technical education. Graduates are capable of independent scientific work and are qualified to creatively develop and deepen the knowledge in the field.

MECHANICAL ENGINEERING TECHNOLOGIES
(Field of study 5.2.7 Mechanical Engineering Technologies and Materials)
Graduates of the third degree study programme are ready to solve difficult research and development tasks in the field of mechanical engineering technologies. They have acquired knowledge of selected scientific methods and approaches and the necessary skills for the utilisation of support information technologies and are able to apply standard as well as specific methods of engineering technology in practice. They are able to lead the research teams, projects and work systematically to achieve research, development and business objectives.
The system of their scientific training allows them to be involved in a wide range of research activities. After completing their study, they are employable at universities, in research institutions, in businesses and their research and development departments and in production mechanical engineering practice as chief executives.

TECHNICAL MATERIALS
(Field of study 5.2.7 Mechanical Engineering Technologies and Materials)
Mechanical engineering technologies and materials are an essential part of the production of machines and their equipment operating in all sectors of the economy of developed countries. For the currently required high reliability of function and quality of components of machines, tools, equipment, consumer goods, etc., the choice of material, its metallurgical preparation and processing technology into products with a final geometric shape, dimensions, and properties, is very important. For advanced economies, it is therefore necessary to have experts who have the knowledge of relations between the composition, structure and properties of construction materials.
Graduates of the third degree study programme Technical Materials master the methods of development and evaluation of metallic and non-metallic materials used in mechanical engineering (e.g. nanomaterials, materials for high-temperatures, materials for long-term load in radiation or corrosive environments, materials for high-speed machining, ultra-light materials, etc.), they understand connections between their composition, structure and properties; they have knowledge of new materials and their production and processing technologies and evaluation methods, as well as methods of influencing of their performance; they deepen and broaden the theoretical knowledge of technological disciplines in the field of metallurgy, advanced technologies of chip and chipless metal processing, automation of technological processes and possibilities of their application in mechanical engineering enterprises, taking into account the qualitative, technical-economic and ecological aspects.
Graduates of the third degree study are qualified to work in research and development departments of manufacturing companies and companies operating in the field of technical materials, their technological processing to semi-finished products and final products as well as in the field of their quality control, purchase and sale, service and maintenance. They can work at top managerial positions in managing production departments with sophisticated production technology, at Slovak Academy of Sciences, technical universities and technical colleges. They are also employable in consultancy companies and organisations that require a higher degree of technical education.

MACHINE PARTS AND MECHANISMS
(Field of study 5.2.5 Machine Parts and Mechanisms)
Graduates of the study programme Machine Parts and Mechanisms acquired during their master's degree study the necessary professional knowledge and skills from vocational subjects such as Mechanics of Solid Mechanics, Fluid Mechanics, Thermomechanics, Construction II – Machine Parts, Strength and Strain, Methodology of Design, CAD systems, Simultaneous Constructing and Optimisation, Finite Element Method, Bionics and Innovations of Technical Systems, etc.,

that together with other constructional and technologically oriented subjects create the theoretical and professional basis for study within the study programme „Design of Machinery and Equipment“ and other related fields.
Following this base, graduates in the third degree study have deepened their knowledge of applied science disciplines focused on the design, construction, modelling and optimisation of machine parts and mechanisms. During the doctoral studies, attention is also paid to research, development and innovation as well as to further development of methods and technologies currently used in research, development, innovation and design of machine parts and mechanisms and their prototypes. On the basis of the choice of offered optional subjects, students have the opportunity for further enhancement of their knowledge and specialisation in the field of research focused on development of methods, procedures and knowledge of 3D modelling and creation of virtual models, simulation, optimisation and analysis with the use of finite element method, innovations, rapid technology prototyping and methods of calculation and simulation for structural and dynamic analysis and optimisation of machine parts and mechanisms.

COMPUTER MODELLING AND MACHINE MECHANICS
(Field of study 5.2.5 Machine Parts and Machinery)
The full- and part-time graduates of the third degree study programme Computer Modelling and Machine Mechanics are aware of the current state of development of the field of study, they master and creatively develop the scientific methods of calculation, simulation and verification of model solutions and create software of new applications in various fields of engineering practice and interdisciplinary engineering. They are ready to develop methods of computer-based engineering and calculation and apply them in the design of mechanical systems in mechanical engineering, in civil engineering, in industry and in electrical engineering. Graduates are able to formulate mathematical and physical models of mechanical fields and their interactions in classical and new technological materials such as composites, smart materials, piezoelectric materials, and so on. They are able to develop experimental methods of mechanics and apply them along with methods of calculation in identification and analysis of mechanical components and systems, as well as in determining their reliability and durability.

ENERGY MACHINES AND EQUIPMENT
(Field of study 5.2.6 Energy Machines and Equipment)
Graduates of the third degree study programme are after its successful completion able to demonstrate the ability to move forward in the field of theoretical knowledge and are ready for independent creative activity. They are able to solve new challenges generated by practice at high theoretical and practical level. Graduates are able to communicate in one of the world languages and so to start a career as an independent creative constructor or a designer, or a scientific researcher or a teacher at the university not only at home but also abroad. The core of knowledge of the PhD. graduates is formed by the foundations of Thermal Technology, Hydraulic Engineering, basic knowledge and orientation towards the use of alternative energy sources, basic knowledge of fuels and their efficient use in the production of energy, knowledge of waste and the possibilities of their energetic use, knowledge of production technology and transformation of energy, knowledge of the design and construction of energy machinery and equipment, knowledge of the physical and chemical properties of construction materials, knowledge of distribution and effective use of thermal energy, basic knowledge of the legal context and basic knowledge of management and marketing context required for the creation and application of production technologies and in communication with customers.

RAIL VEHICLES
(Field of study 5.2.4 Motor Vehicles, Rail Vehicles, Ships and Aircraft)
Graduates of the third degree study programme Rail Vehicles in the field of study 5.2.4 Motor Vehicles, Rail Vehicles, Ships and Aircraft master the scientific methods of research and development of transport means with a focus on rail vehicles.
Graduates in the third degree study programme Railway Vehicles have acquired the knowledge and skills required for the research and development of rail vehicles, rationalisation and improvement of the quality and project management of rail vehicles' maintenance as well as knowledge of increase of their operating efficiency respecting environmental requirements. Graduates are capable of independent scientific work and are ready to creatively develop and deepen the knowledge in the field.

INDUSTRIAL ENGINEERING AND MANAGEMENT
(Field of study 5.2.52 Industrial Engineering)
Graduates of the third degree study programme are ready to solve difficult research and development tasks in the field of industrial engineering. They have the knowledge of selected scientific methods and approaches and the necessary skills for the use of information technology support tools and are able to apply standard and specific methods of industrial engineering in practice. They are able to lead research teams, projects and work systematically to achieve set research, development and business objectives.
The system of their scientific preparation allows them to be integrated into a wide range of research activities. After graduation they are employable at universities, in research institutions, in business development departments and after self-adapting process at positions in the top management of organisations.