UNIVERSITY OF ŽILINA

FACULTY OF ELECTRICAL ENGINEERING

ANNUAL REPORT 2017

FACULTY OF ELECTRICAL ENGINEERING

Foreword

The Faculty of Electrical Engineering is an essential part of the University of Žilina – a modern university providing a full range of technological, economic, management, and a limited range of humanistic and natural science education at under-graduate, graduate and post-graduate levels.

During its more than 60-year existence the University has become a reputable institution with the firm position in the system of the Slovak higher education institutions. It was originally established in 1953 as the College of Railways in Prague. In 1959 the College changed its name to the University of Transport and in 1962 it was moved to Žilina. Afterwards, as a result of the increasing role of communications, the title was amended to the University of Transport and Communications. A series of transformation steps that brought essential changes into the academic life of the University and its Faculties and Institutes started in 1989. They proved effectiveness on the way towards a modern institution, featuring a character of a full-value university, named the University of Žilina since November 1996.

Nowadays, the University of Žilina consists of 7 Faculties (important dates of their establishing and/or transformation are indicated in parentheses):

- Faculty of Electrical Engineering (1953; 1992),
- Faculty of Mechanical Engineering (1953; 1992),
- Faculty of Operation and Economics of Transport and Communications (1953),
- Faculty of Civil Engineering (1990),
- Faculty of Management Science and Informatics (1990, 1996),
- Faculty of Security Engineering (1952, 1998, 2014),
- Faculty of Humanities (1998, 2010).

In addition to the Faculties, the University also involves the following 10 Institutes:

- Institute of High Mountain Biology,
- CETRA – Centre for Transportation Research,
- Institute of Forensic Research and Education,
- Institute of Competitiveness and Innovations,
- University Science Park,
- Research Centre,
- Institute of Physical Education,
- Institute of Lifelong Education,
- Aviation Training and Education Centre,
- Institute of Information and Communication Technologies.

PROFILE AND STRUCTURE OF THE FACULTY OF ELECTRICAL ENGINEERING

As mentioned above, history of the Faculty of Electrical Engineering goes back to the year 1953. In 1959 it was merged with the Faculty of Mechanical Engineering and that symbiosis took 33 years. In 1992, after the split, the Faculty returned to its previous original name. It became the first technically oriented faculty and generally the second Faculty in the Slovak Republic awarded the Quality Certificate for quality control system according to ISO 9001 (in 2003). Since that time further three successful re-certifications were realized (2007; 2010, and 2013).

Structure of the Faculty

From a structure point of view, the Faculty of Electrical Engineering (FEE) consists of eight departments (seven departments are located directly in Žilina and one institute established at the satellite work place in Liptovský Mikuláš), the Service centre and the Dean's office. Scientific and research activities, properly projected to educational activities, are dynamically developing as a response to floating markets seen within both national and pan-European context. At the very beginning, the activities of original departments were mainly oriented on technical aspects of classical transport, its safety and problems of technical operation of telecommunications. At present, the scientific and research activities addresses the latest problems of information and communication technologies, safety-related control of transport and industry processes, telecommunication engineering, power electronic systems, modern control of electric networks and others. Additionally, such interdisciplinary fields as mechatronic and biomedical engineering are also developed.

The FEE's Departments are listed below:

- Department of Physics (DPh),
- Department of Measurement and Applied Electrical Engineering (DMAEE),
- Department of Electromagnetic and Biomedical Engineering (DEBE),
- Department of Mechatronics and Electronics (DME),
- Department of Power Electrical Systems (DPES),
- Department of Control and Information Systems (DCIS),
- Department of Multimedia and Information-Communication Technologies (DMICT),
- Institute of Aurel Stodola situated in Liptovský Mikuláš (IAS).

The following table 1 shows the distribution of the pedagogical and the research positions at particular FEE's departments as of 31.12.2017.

Tab. 1: Number of pedagogical and research employees at the departments of the FEE as of 31.12.2017

Department	Pedagogical staff		Research staff	
	Full-time	Part-time	Full-time	Part-time
DPh	15	-	3	-
DMAEE	8	-	-	-
DEBE	11	-	1	1
DME	13	1	2	3
DPES	13	4	2	2
DCIS	13	2	2	-
DMICT	23	6	4	-
IAS	9	-	-	-
Total	**105**	**13**	**14**	**6**

Number of employees at the FEE according to the categories can be seen in the table 2.

Tab. 2: Number of employees at the FEE according to the categories in 2011-2017

Year	2011		2012		2013		2014		2015		2016		2017	
Full-time / Part-time	**FT**	**PT**	**FT**	**PT**	**FT**	**PT**	**FT**	**PT**	**FT**	**PT**	**FT**	**PT**	**FT**	**PT**
Prof.	17	1	17	2	18	-	18	-	17	-	19	-	18	-
Guest Prof.	-	1	-	1	-	1	-	4	-	4	-	4	-	4
Assoc. Prof.	28	-	25	1	28	1	36	1	34	3	29	4	28	3
Senior Lecturer	58	8	55	6	54	6	49	6	51	8	53	5	57	6
Lector	1	2	2	-	3	-	5	-	4	-	4	-	2	3
Tech. Admin. Staff	37	1	32	1	32	3	31	3	27	2	26	3	27	2
Research Staff	22	2	26	3	21	5	16	6	12	6	14	4	16	6
Total	**163**	**15**	**157**	**14**	**156**	**16**	**155**	**20**	**145**	**23**	**145**	**20**	**147**	**24**

Highlights

The most important events in 2017 can be summarized as follows:

- Implementation of the project SENSIBLE “SENSors and Intelligence in BuiLt Environment” Marie Skłodowska-Curie Actions (MSCA) Research and Innovation Staff Exchange (RISE) H2020-MSCA-RISE-2016;
- Innovation of research infrastructure, modern technologies and laboratories;
- Preparation of the international conference ELEKTRO 2018;
- Continuation of the implementation of the international project “ERAdiate”, one of the largest 7th Framework Programme projects in Slovakia from financial point of view;
- The project *readySTEMgo* of the Erasmus+ programme achieved a 91% success rate in the EU scoreboard;
- Submission of six proposals of international research projects;
- Successful implementation of numerous national research projects (SRDA, VEGA, KEGA);
- Continuing graduation growth of the faculty staff by appointment of one full professor and one associate professors;
- Organizing a workshop on the theme "Energy for the Future: Energy 4.0", which was part of the European Week of Regions and Cities in Brussels. Expert co-guarantors of the workshop were VŠB-TU Ostrava and Silesian University of Technology Gliwice. The patronage over the event was taken by member of the European Parliament - Ivan Štefanec.

EDUCATIONAL ACTIVITIES

- The FEE regularly (annually) prepares and offers to the faculty students' anonymous inquiries realized in electronic form within e-learning system asking for feedback on quality of educational process and teachers. However, there is still relatively small interest of students in filling in the inquiries and evaluating the educational quality. On the basis of processing of the questionnaires results, the heads of departments in the presence of competent teachers have carried out an evaluation of the teaching quality and defined next actions for the improvement of teaching in complex annual evaluation of the staff.
- The courses in social sciences, psychology, economics and law are offered to the students in all study programs at Bachelor and Master degree study.
- In all study programs at Bachelor and Master degree study students are also offered courses focused on project teaching form through which the students better acquire theoretical and practical aspects of their education.
- The FEE increases the attention given to the adaptation of new 1st degree students to the university environment (information sessions, detailed monitoring of study results, support of mutual communication between students – teachers, support for solving common student activities). For this purpose, mentoring program continued at FEE in 2017.
- Considerable attention is paid to students of the 3rd degree study. The FEE supports them mainly in preparing high quality publication outputs, fulfilment of curricula, preparation and defending the dissertation thesis. The curricula and conditions of doctoral study were therefore modified during the process of accreditation.
- The FEE is using complex software system for supporting e-learning, which enables access into e-learning blocks, test and examination, and organizational provision of study. The FEE claims from pedagogical staff active usage of e-learning system and at the same time it creates conditions for e-learning development, not only within the FEE but also within the university
- The FEE participates in a student mobility system. Mobility of students to foreign universities, as well as to industrial environment are supported and fully integrated into the learning process of students. Students can thus part of their study take at leading foreign educational institutions or in major industrial enterprises or corporations.
- The FEE supports the development of interdisciplinary, multidisciplinary, distance and lifelong learning; and education of foreign languages mainly for young employees and doctoral students.
- The FEE has had the credit system for all study degrees. The system enables uniform evaluation of study results in the frame of EU and markedly makes the realization of mobility and acceptation of achieved results simpler. According to the Regulations of the Ministry of Education of the Slovak Republic, the Faculty came in the academic year 2008/2009 to the evaluation system of students load during the semester without "pre-credits".
- At the FEE there is a contact person (vice-dean for education) responsible for help and life coordination of disabled students.

Tab.3: Overview of accredited study programs (1st degree - Bachelor study programs, 2nd degree - Master study programs, 3rd degree - Doctoral study programs)

Field of study	Study program	Form of study	Duration of study	Title awarded	Guaranteed by
1st study degree					
Control Engineering	Control Engineering	FT	3 years	Bc.	Mária Franeková
Biomedical Engineering	Biomedical Engineering	FT	3 years	Bc.	Ivo Čáp
Electrical Engineering	Autotronics	FT	3 years	Bc.	Pavol Špánik
Electrical Engineering	Electrical Engineering	FT	3 years	Bc.	Alena Otčenášová
Telecommunications	Digital Technologies	FT	3 years	Bc.	Jarmila Műllerová
Telecommunications	Digital Technologies	PT	3 years	Bc.	Jarmila Műllerová
Telecommunications	Multimedia Technologies	FT	3 years	Bc.	Roman Jarina
Telecommunications	Telecommunications	FT	3 years	Bc.	Peter Počta
2nd study degree					
Control Engineering	Applied Telematics	FT	2 years	Ing.	Aleš Janota
Control Engineering	Process Control	FT	2 years	Ing.	Juraj Spalek
Biomedical Engineering	Biomedical Engineering	FT	2 years	Ing.	Ivo Čáp
Electronics	Photonics	FT	2 years	Ing.	Dušan Pudiš
Electrical Engineering	Electric Power Systems	FT	2 years	Ing.	Juraj Altus
Electrical Engineering	Electric Power Systems	PT	2 years	Ing.	Juraj Altus
Electrical Engineering	Electric Drives	FT	2 years	Ing.	Valéria Hrabovcová
Electrical Engineering	Power Electronic Systems	FT	2 years	Ing.	Pavol Špánik
Telecommunications	Multimedia Engineering	FT	2 years	Ing.	Vladimír Wieser
Telecommunications	Telecommunication and Radio-com. Engineering	FT	2 years	Ing.	Milan Dado
3rd study degree					
Control Engineering	Process Control	FT	3 years	PhD.	Karol Rástočný, Juraj Spalek, Mária Franeková
Control Engineering	Process Control	PT	4 years	PhD.	Karol Rástočný, Aleš Janota, Mária Franeková
Electric Power Systems	Electric Power Systems	FT	3 years	PhD.	Juraj Altus, Alena Otčenášová, Peter Braciník
Electric Power Systems	Electric Power Systems	PT	4 years	PhD.	Juraj Altus, Alena Otčenášová, Peter Braciník
Electrotechnologies and Materials	Electrotechnologies and Materials	FT	3 years	PhD.	Peter Bury, Dušan Pudiš, Ivan Martinček
Electrotechnologies and Materials	Electrotechnologies and Materials	PT	4 years	PhD.	Peter Bury, Dušan Pudiš, Ivan Martinček

Power Electrical Engineering	Power Electrical Engineering	FT	3 years	PhD.	Pavol Špánik, Pavol Rafajdus, Michal Frivaldský
Power Electrical Engineering	Power Electrical Engineering	PT	4 years	PhD.	Pavol Špánik, Pavol Rafajdus, Michal Frivaldský
Telecommunications	Telecommunications	FT	3 years	PhD.	Vladimír Wieser, Milan Dado, Róbert Hudec
Telecommunications	Telecommunications	PT	4 years	PhD.	Vladimír Wieser, Milan Dado, Róbert Hudec
Theory of Electrical Engineering	Theory of Electrical Engineering	FT	3 years	PhD.	Klára Čápová, Ladislav Janoušek, Mariana Beňová
Theory of Electrical Engineering	Theory of Electrical Engineering	PT	4 years	PhD.	Klára Čápová, Ladislav Janoušek, Mariana Beňová

Tab. 4: Number of the faculty students (as of 31.10.2017)

Field of study/Study program	**Number of students**			
	Full-time study		**Part-time study**	
	Nationals	**Foreigners**	**Nationals**	**Foreigners**
1st study degree				
Control Engineering	108	1		
Autotronics	34			
Biomedical Engineering	75	2		
Electrical Engineering	195	3	6	
Digital Technologies	54		15	1
Multimedia Technologies	75	3		
Telecommunications	93	3		
Total	**634**	**12**	**21**	**1**
2nd study degree				
Applied Telematics	4			
Biomedical Engineering	60			
Electric Power Systems	56			
Electric Drives	10	2		
Photonics	10	1		
Multimedia Engineering	59			
Process Control	62			
Telecomm. and Radio-comm. Eng.	54			
Power Electronic Systems	31			
Total	**346**	**3**		
3rd study degree				
Electric Power Systems	5		3	
Electrotechnologies and Materials	4		1	

Process Control	6			
Power Electrical Engineering	18	1	3	
Telecommunications	11		1	
Theory of Electrical Engineering	4			
Total	**48**	**1**	**8**	

Tab. 5 and 6: Overview of the faculty students' number since 2013 (as of 31.10.2017)

Full-time study				
2013	**2014**	**2015**	**2016**	**2017**
1st study degree				
1037	864	778	654	634
2nd study degree				
507	428	381	356	346
3rd study degree				
59	58	62	51	48

Part-time study				
2013	**2014**	**2015**	**2016**	**2017**
1st study degree				
47		16	23	21
2nd study degree				
	31	31	31	
3rd study degree				
20	15	12	9	8

Admission for study

a) Form of the admission procedure in 2017 and a brief assessment:

The basic condition for admission to bachelor study (1st level study programme) is completed secondary education or completed secondary vocational education. The admission procedure is performed through the selection procedure. Within the selection procedure, the results from subjects Mathematics and Physics achieved during secondary school study are assessed while the type of the attended secondary school is taken into account. Personal participation of the applicant at the admission procedure is mandatory for the study program Multimedia Technologies. For all other study programmes no personal participation is required. Automatically are admitted applicants for study (except applicants for the study program Multimedia Technologies) who meet at least one of the following criteria:

- graduates of secondary grammar schools and secondary electro-technically oriented schools with average results from mathematics and physics at the final year-and/or school-leaving certificates up to 2.00,
- graduates of secondary grammar schools and secondary electro-technically oriented schools who passed the school leaving exam in Mathematics or in Physics with the final mark not worse than 2.00,
- if the applicant for study participates and succeeds at the Olympics in mathematics, physics, informatics and electrical engineering (district round), ŠVOS (relating to electrical engineering and

informatics) and other competition in the field of electrical engineering, this will be taken into account in the selection procedure.

All other applicants not meeting the above criteria and all applicants for studying the study programme Multimedia Technologies will be included in the selection procedure. The applicants in the selection procedure are ranked according to the score for the achieved results exclusively from the subjects Mathematics and Physics at the secondary school. Details of the method of allocation of points are put on the website of the FEE.

The selection process for the 2nd study degree is based on results from previous Bachelor study of an applicant. Those applicants who completed the Bachelor degree with honours, or reached the required weighted average are accepted without the selection procedure. The other applicants are accepted according to a ranking list established on the basis of weighted averages for the whole Bachelor study.

The selection procedure for the 3rd study degree takes the form of a personal interview with each applicant individually in front of an admission committee. One part of the interview is focused on mapping the overview of the applicant in the professional field related to the chosen topic of the doctoral study. The next part aims to verify the knowledge of foreign languages and the assumptions for individual scientific work. The order of applicants is drawn up by the committee in the form of the secret voting.

b) Faculty activities that promote learning:

The FEE devoted considerable effort to promote the study programs to students of secondary schools. Representatives of the Faculty participated in the Open Days at selected secondary schools. The FEE organized for secondary schools its own Open Day, and also special exercises for students of selected secondary schools. Representatives of the Faculty participated in various promotional events organized at university level (Researcher night, Christmas at the university, ...). At the same time, the promotion of study opportunities at the FEE has been more intense on social networks (Facebook, Twitter, ...).

Number of applicants for study and number of enrolled students can be seen in the following Tables.

Tab.7: Statistical review of the admission procedure in 2017

Field of study/Study program	**Number of applicants for study**					
	Full-time study			**Part-time study**		
	S	**P**	**E**	**S**	**P**	**E**
1st study degree						
Control Engineering	94	87	56			
Autotronics	39	33	22			
Biomedical Engineering	53	48	31			
Digital Technologies	29	27	21	5		
Electrical Engineering	163	154	109			
Multimedia Technologies	63	51	39			
Telecommunications	78	76	47			
Total	**519**	**476**	**325**			
2nd study degree						
Applied Telematics						
Biomedical Engineering	34	34	33			
Electric Drives	6	6	6			
Electric power systems	32	31	30			
Photonics	7	7	6			

Multimedia Engineering	30	28	22			
Process Control	36	35	30			
Telecomm. and Radio-comm. Eng.	24	24	21			
Power Electronic Systems	20	19	16			
Total	**189**	**184**	**164**			
3rd study degree						
Electric Power Systems	3	2	2	1	1	1
Electrotechnologies and Materials	1	1	1	1	1	1
Process Control	2	2	2			
Power Electrical Engineering	7	7	7			
Telecommunications	6	5	5			
Theory of Electrical Engineering	1	1	1			
Total	**20**	**18**	**18**	**2**	**2**	**2**

S - Subscribers, P - Participation in the admission procedure, E - Enrolled

Tab.8: Number of graduates of the Faculty in the academic year 2016/2017

Field of study/Study program	**Number of graduates in 2016/2017**			
	Full-time study		**Part-time study**	
	Nationals	**Foreigners**	**Nationals**	**Foreigners**
1st study degree				
Control Engineering	17			
Biomedical Engineering	38			
Digital Technologies	8			
Electrical Engineering	56			
Multimedia Technologies	20			
Telecommunications	28			
Total	**167**			
2nd study degree				
Biomedical Engineering	20	1		
Electric Power Systems	32		31	
Electric Drives	8			
Multimedia Engineering	26	2		
Process Control	24			
Telecomm. and Radio-comm. Eng.	44			
Power Electronic Systems	7			
Total	**161**	**3**	**31**	
3rd study degree				
Electric Power Systems	1			
Electrotechnologies and Materials	2			
Process Control				
Power Electrical Engineering	7	1		
Telecommunications	5			
Theory of Electrical Engineering	3			
Total	**18**	**1**		

Tab.9: Overview of graduates of the Faculty since 2011/2012 (as of 31.12.2017)

Full-time study					
2011/12	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**
1st study degree					
264	246	208	186	196	167
2nd study degree					
173	194	233	197	198	161
3rd study degree					
26	17	14	14	12	18
Part-time study					
2011/12	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**
1st study degree					
		47			
2nd study degree					
23					31
3rd study degree					
2	2	7	3	3	1

Graduates' employment

Bachelor study programmes

Control engineering
(Field of study Control engineering)

The graduate will acquire education in the field of control engineering and process control with the support of information and communication technologies. He/she has also practical experience in application of safety critical control and communication systems performed mainly based on PLC and industrial networks. He/she will successfully apply in the operation of control and information systems at the process and operative level. Theoretical knowledge acquired during the bachelor study will create good prerequisites for further education, either within the further forms of university study or within lifelong education.
Software skills: C language, C++, MATLAB, PLC, ATMEL, MS ACCESS, HTML, CSS, Tia Portal.

Autotronics
(Field of study Electrical engineering)

The graduate will acquire basic and general knowledge required in wide spectrum of electrical proficiency especially in areas of automobile electronics, hybrid vehicles and electromobility. The gained knowledge is needed for the second degree study programs in this study program or affinitive ones. Even if a graduate would not continue in the next level of the university studies, he/she will gain required wide professional profile and he/she is able to adapt in different technical or other businesses. The graduates of Autotronics study program should be professionals who are able to identify various electronic faults in cars. They can successfully apply mainly in car services and repair workshops, car selling shops and in education institutions.
Software skills: C language, C++, MATLAB, Simulink, CodeWarrior, CodeComposer, Asembler, AVR Studio, Vissim, PLECS.

Biomedical engineering
(Field of study Biomedical engineering)

The graduate will acquire knowledge in the subjects of theoretical and technical basis, as well as in theoretical basis of medical disciplines with emphasis on the structure and functioning of biological objects, biochemical, physiological and pathophysiological processes. He/she will gain knowledge of medical technique and its applications, modern tools of biomedicine, principles of their activities, conditions for operation and their safe for diagnostic and treatment purposes. He/she is able to evaluate functionality of technical and computer aided equipment under given conditions of a health care facility or other operations and laboratories and at the same time able to lead qualified communication with the health care staff. He/she will successfully apply as an expert in medical and biological laboratories, in the operation of biomedical technique, in business and service organisations.
Software skills: C language, MATLAB, EAGLE.

Electrical engineering
(Field of study Electrical engineering)

The graduate will acquire knowledge from the subjects of theoretical base applied in the fields of power electronics, utilisation of applied microprocessor technique and programming, electric drives, electrical traction, electric power systems and mechatronics. He/she will gain knowledge in the field of quality management and reliability in a production company, marketing and trade, electrical standards, rights and legal regulations related to the field of study. Graduates may further specialise in the field of automobile electrical engineering, electrical traction, electric drives, electric power systems, power electronic systems and mechatronics systems. Graduates obtain theoretical knowledge and practical experience in order to acquire the principles, installations, operations, functions, service and repairs of electrical products, devices and equipment in compliance with international standards. He/she will successfully apply in all fields of power electrical engineering, in the field of mechatronics, robotics, applied microprocessor technique, electronics, optoelectronics, power electronics, computer design and construction in organisations of administrative, production, operation or repair character.
Software skills: MS Office, MATLAB, SIMULINK, FEMM, MOTORSOLVE, SICHR, DIALUX, DSPACE, CODE WARIOR, LABWIEV, EMPT-ATP, MODES, GE-PSLF, RUPLAN, RS Logix, RS Link, RS View, Assembler, AVR Studio, EAGLE, OrCAD-PSPICE, PLECS.

Digital technologies
(Field of study Telecommunications)

The graduate will acquire knowledge from the basic disciples in the field oriented to general professional knowledge in the area of digital technologies, electronics, optoelectronics, communication systems, networks and services, transmission media to be connected with obtaining practical experience in the field of digital technologies, mainly information processing, transmission and communication systems. He/she will gain experience and skills in the field of digital system operation. Apart from that, he/she will acquire basic legal, economic and managerial knowledge to be utilised in the field of digital system services, digital security and language skills including specific terms. The graduate will apply successfully as a technician, technologist or manager of technician team, administrator of digital devices and systems.
Software skills: C language, C++, PHP, JavaScript, MySQL, Flash animations, Code Blocks, LabView, PHPMyAdmin, MySQLWorkbench, ILEAD GIF Animator, XARA X, ADOBE Imagereak, Adobe After Effects, AVI 3d studio, DiagramDesigner, HTML Kit.

Multimedia technologies
(Field of study Telecommunications)

The graduate will acquire knowledge in acquisition, processing and presentation of digital signal at an adequate technical, aesthetical, ethical and art levels. The synergy of technical and art education will make the graduate a specialist in creating multimedia presentations. The graduate will gain knowledge and practical experience in working with the screen and the sound element of multimedia that predetermines him/her for working in organisations focused on information technologies, advertising and counselling activities, in public administration institutions, in studios producing multimedia products.
Software skills: C language, C++, MATLAB, Java, JSP, Blender, Cinema 4D, Adobe Premiere, Adobe Audition, Adobe Photoshop, Adobe Illustrator, Adobe InDesign, Protools, HW, SQL, PSpice, Microsim, Corel Draw, QuarkxPress, LaTex.

Telecommunications
(Field of study Telecommunications)

The graduate will acquire necessary theoretical and specific knowledge, information on technologies and methods from the field of transmission and processing of all information types, on the structure and operation of respective equipment and systems of fixed and mobile networks. He/she has knowledge in information technology utilisation in the given field, as well as knowledge in economics, management, psychology and legal regulations. He/she may successfully operate in companies focused on the area of communication and information technologies as an executive and managing employee.
Software skills: C language, C++, MATLAB, Java, JSP, Blender, 3dMax, Cinema 4D, Audition, Protools, Premierepro, HW, Adobe InDesign, SQL, PSpice, Microsim, Adobe Illustrator, Corel Draw, QuarkxPress, LaTex, Blender, 3dMax, Cinema 4D, Photoshop, MS Office, MATLAB, SIMULINK, from SPICE family – simulation programs oriented on analyses and syntheses of electronic circuits, EAGLE, LabView, VPIphotonics.

Master study programmes

Applied telematics
(Field of study Control engineering)

The graduate will acquire education in the areas of design, modelling, application, implementation, inspection, service and maintenance of telematics systems and their components, especially intelligent transport systems, control systems of road and railway tunnels, complex transportation systems and telematics systems in health care. He/she will gain theoretical knowledge about sets of technical instruments utilized in selected application areas (primarily in the area of transport, additionally in other areas – health care, public services, etc.) that are required for understanding of telematics systems, their components, modern development trends, position of human factor in these systems as well as knowledge needed for design, control and assessment of those systems.
Software skills: Ethernet, PLC, PHP language, MySQL, HTML language, UML, OCL language, MATLAB, PYTHON language, SCADA/HMI systems.

Biomedical engineering
(Field of study Biomedical engineering)

The graduate has an overview of modern technical tools of biomedicine, diagnostic, therapeutic and rehabilitation devices, their safe use and the world trend in their development. He/she gains knowledge in theoretical and selected clinical medical disciplines in order to understand the purpose of technical tool application, ability to assess functionality and ability to create conditions for qualified communication with medical doctors. He/she has wide knowledge of existing information systems and technologies. He/she gains

knowledge in the field of management in health care, bioethics, medical ethics and psychology of management. The graduate can successfully apply in all fields of technical and information provision of health care facilities, in institutes and laboratories of biomedical research and development, in the field of information systems and in technical management of mainly health care operations. He/she will also operate as managerial employee in the management of health care facilities, as well as a pedagogue and researcher at universities.
Software skills: C language, HTML, PHP, MATLAB, Simulink, CST-studio suite.

Electric power systems
(Field of study Electrical engineering)

The graduate has knowledge in the subjects of theoretical base developed in the field of power and applied electronics, programming and utilisation of computer technology, electric drives, electrical traction, electric power systems, management of electricity transmission systems and information systems in electric power systems, has basic knowledge of economic methods for operation of systems, has knowledge of law, psychology and quality management. The graduate is capable of independent projection, constructional and design works, is able to decide on concept issues and management of large organisational units. The graduate may successfully operate in projecting, management, construction and operation of industrial companies, railways, city public transport, in all areas of electric power systems, in projection and research institutes and other organisations of administrative, production, operation or repair character.
Software skills: MATLAB, EMTP-ATP, MODES, GE-PSLF, MS OFFICE, PTOLEMY, SICHR, LABVIEW, EAGLE, ASSEMBLER, VISUAL STUDIO, C++, C, RUPLAN.

Electric drives
(Field of study Electrical engineering)

The graduate has knowledge in the subjects of theoretical base developed in the field of power and applied electronics, programming and utilisation of computer technology, electric drives, electrical traction, electric power systems, management of electricity transmission systems and information systems in electric power systems, he/she has basic knowledge of economic methods for operation of systems, has knowledge of law, psychology and quality management. The graduate is capable of independent projection, constructional and design works, is able to decide on concept issues and management of large organisational units. The graduate may successfully operate in projecting, management, construction and operation of industrial companies, railways, city public transport, in all areas of electric power systems, in projection and research institutes and other organisations of administrative, production, operation or repair character.

Software skills: FEMM, MATLAB, OPERA-3D, COMSOL Multiphysics, MS Office, Code Warrior, EAGLE, Altium Desinger, Visual Studio, Python, Step 7, Micro win, WinCC.

Photonics
(Field of study Electronics)

The application of graduates has close connection especially with telecommunications, information technologies, medicine, industrial technologies, aeronautics, military technologies, and civil engineering as well as in consumer goods and entertainment industry. The graduate should know to creatively, analytically and in details orient in the following technical areas: design, modification and testing of laser equipment and components for telecommunications, medicine and for other purposes; utilization and enhancing quality and design of optical fibres technologies; development and testing of optical, photonic or imaging prototypes and equipment; design of electro-optical sensor systems; application of new photonic technologies and equipment into different industrial areas; optical design of standard lighting; definition of commercial,

industrial or scientific utilization of electro-optical applications; creation, analysis and testing of optical fibres lines.
Software skills: Code Block (C, C++), LabVieW.

Power electronic systems
(Field of study Electrical engineering)

Universality of this study programme guarantees very wide application of graduates on the labour market. The acquired knowledge may be applied in the most lucrative areas of electrical engineering, machinery and energetic industry, as well as in transportation. In the future their application in the services field is also expected. These are mainly areas of development, design, projection and application of power and control electronic systems, mechatronic and automotive systems, their control nodes, superior control systems, industrial automatic machines and robots and equipment of industrial automation. With regard to significant representation of subjects oriented to programming and development of control software, the graduate may operate successfully in very interesting jobs. The graduates from this study programme may apply for jobs at companies dealing with projects, production and application of power electronic and/or mechatronic systems and industrial automation. They may successfully apply also in specialised machinery companies working in the fields of automobile industry, chemical and petrochemical industry, gas industry, paper mill and transportation.
Software skills: Freescale ARM, Texas Instruments DSP, ANSI C language, EAGLE, OrCADPSpice, PLECS, LabVieW, Simulink, COMSOL, VHDL ISE Desing Suite, dSpace, Texas Instruments Education Modules.

Process control
(Field of study Control engineering)

The graduate gains education in the field of analysis and synthesis of automated control and information systems mainly for the area of information processing and transmission in the control of safety critical processes. Graduates from the study programme Process Control specialize in safe control of transportation process with emphasis on intelligent transport systems and signalling systems. They handle support telematic systems and safe control of industrial processes with emphasis on complex technologies, safe critical production applications, intelligent buildings, security systems for personal and property protection, security of information systems and modern computer networks.
Software skills: Ethernet, PLC, Jazyk PHP, MySQL, Jazyk HTML, UML, Jazyk OCL, MATLAB, Jazyk PYTHON, SCADA/HMI systems.

Telecommunication and radiocommunication engineering
(Field of study Telecommunications)

The education is focused on the topic of telecommunication and information networks with direction on digital communication networks, i.e. optic and metallic systems and networks, intelligent networks, terrestrial mobile networks, microwave radio and satellite communication, network management, architecture of signalling systems and communication protocols, applications of multimedia and multimedia services, reliability and diagnostics of systems and networks. The graduate will successfully apply as a creative employee in research, technical development, telecommunication design and management, as well as in all fields of applications of telecommunication, radiocommunication and information and communication technologies and services.
Software skills: ADOBE, HTML, PHP, MySQL, Blender, 3dMax, Cinema 4D, Android, JAVA, Microsoft Direct3D, OpenGL, MATLAB, After Effect, ZScan, Geomagic, MS Office, MATLAB, SIMULINK, from SPICE family – simulation programs oriented in analyses and syntheses of electronic circuits, VPIphotonics, ASEMBLER.

Multimedia engineering
(Field of study Telecommunications)

The student of the Multimedia Engineering study programme in the telecommunications field of study will enhance his/her knowledge to the necessary extent in the subjects of theoretical base of the field of study and gain detailed knowledge of media communication, networks and services, their convergences and also their securities. By selection of optional subjects he/she may more closely specialize in the field of processing image, graphic or audio information. A significant element of knowledge is understanding of web technologies, mainly as far as the design of web services is concerned, knowledge of 2D and 3D graphic and animation systems and applications and digital processing of the multimedia contents. The student of this study will also acquire knowledge of aesthetics and creative attitude in the design of multimedia products, legal regulations in the field of electronic communication, their management, economics and marketing. The graduate from master study will be able to specialise and to adapt to different levels depending on the needs of practice, research and development, as well as the ability of permanent knowledge enhancement in the field. The students will obtain knowledge and skills that enable them to work independently as well as in teams in solving projects integrating the technical and creative level into one, or even to lead such teams.
Software skills: ADOBE, HTML, PHP, MySQL, Blender, 3dMax, Cinema 4D, Android, JAVA, Microsoft Direct3D, OpenGL, After Effect, ZScan, Geomagic, MS Office, MATLAB, SIMULINK, from SPICE family – simulation programs oriented in analyses and syntheses of electronic circuits.

Doctoral study programmes

Electric power systems
(Field of study Electric power systems)

The doctoral study in the field of Electric power systems is designed for graduates of the second degree of university study (Master/Master of Science) who tend to the original solutions of engineering and scientific problems in the electrical engineering/electric power systems. For solving of these challenges the doctoral student utilises the latest findings of modern analytical and numerical methods, methods of mathematical and physical modelling, informatics, measurements of electric and non-electric variables, microelectronics, electric power systems, automatic and discrete control up to the level of artificial intelligence, including the implementation of control by corresponding processors, as well as knowledge of other disciplines. Prerequisites for successful completion of the doctoral degree studies are the PhD student´s ability of abstract thinking and his/her ability to apply and implement acquired knowledge when solving technical problems. The PhD student learns how to properly characterize and understand physical phenomena and experimental observations on them; he/she searches for their adequate models and is able to implement new applications in the above specified disciplines in science, research and practice. During his/her doctoral studies the PhD student acquires comprehensive theoretical knowledge, experimental skills and practical experience. He/she masters methodology of scientific work and is prepared for independent scientific work.

Electro-technologies and materials
(Field of study Electro-technologies and materials)

The graduates in the doctoral degree study in the field of Electro-technologies and materials master scientific methods of evaluation of material structures and systems in terms of process technology, structure, durability, reliability, intermediate and final diagnostics and control, both in terms of determination their basic physical properties of the substrate material and their final structure. The graduate is able to use the obtained in-depth knowledge in a wide range of production technologies in electronics, in the design, as well as in the organization and optimisation of various technological processes.

The graduate acquires abilities to predict changes of material properties in various conditions of their use as well as in terms of utilising various technological procedures in production of electrical components, structures, systems and equipment.
The graduates of the third degree of university studies in the field of study Electrotechnologies and materials acquire deep theoretical and methodological knowledge of technologies and materials applied in electrical and electronics industry, of properties of materials and processes running in them that create the object of the scientific research and development at the state-of-the-art level of scientific research in the world.

Process control
(Field of study Control engineering)

The doctoral study in the field of Automation is designed for graduates of the second degree of university study (Master/Master of Science) who tend to the original solutions of engineering and scientific problems in management and control of transport and technological processes. For solving of these challenges the doctoral student utilises the latest findings of modern analytical and numerical methods, methods of mathematical and physical modelling, informatics, measurements of electric and non-electric variables, microelectronics, electric power systems, automatic and discrete control up to the level of artificial intelligence, including the implementation of control by corresponding processors, as well as knowledge of other disciplines. Prerequisites for successful completion of the doctoral degree studies are the PhD student´s ability of abstract thinking and his/her ability to apply and implement acquired knowledge when solving technical problems. The graduates in the field of study Automation gain knowledge based on the state-of-the-art scientific knowledge in the field and by their own creative work they will contribute to their development as well as to new findings in the respective field. The aim of the doctoral study is to educate such a specialist who will not only possess complex knowledge but will be able to enrich the science and knowledge in the field of process control.
The graduates acquire in-depth theoretical and methodological knowledge and practical experience in the main areas of process control (including processes related to security) such as the theory of automatic control, system theory, process control, control systems, logic and event systems and also in the field of secure communication and information processing.

Power electrical engineering
(Field of study Power electrical engineering)

The doctoral study in the field of Power electrical engineering is designed for graduates of the second degree of university study (Master/Master of Science) who tend to the original solutions of engineering and scientific problems in the field of power electrical engineering, i.e. electric drives, power electronics, electric traction, electrical machinery and equipment and traction electric power systems. For solving of these challenges the doctoral student utilises the latest findings of modern analytical and numerical methods, methods of mathematical and physical modelling, informatics, measurements of electric and non-electric variables, microelectronics, electric power systems, automatic and discrete control up to the level of artificial intelligence, including the implementation of control by corresponding processors, as well as knowledge of other disciplines. Prerequisites for successful completion of the doctoral degree studies are the PhD student´s ability of abstract thinking and his/her ability to apply and implement acquired knowledge when solving technical problems. The PhD student learns how to properly characterize and understand physical phenomena and experimental observations on them; he/she searches for their adequate models and is able to implement new applications in the above specified disciplines in science, research and practice. During his/her doctoral studies PhD student acquires comprehensive theoretical knowledge, experimental skills as well as practical experience. He/she masters methodology of scientific work and is prepared for independent scientific work. The graduates in the doctoral study in Power electrical engineering acquire knowledge based

on the state-of-the-art scientific knowledge in the field and by their own creative work they will contribute to their development as well as to new findings in the respective field.

Telecommunications
(Field of study Telecommunications)

The aim of the doctoral degree studies in the field of Telecommunications is to prepare skilled professionals focused on the development, implementation, management and operation of complex telecommunication systems of the new generations that virtually permeated all spheres of human activity. The study programme is built on the previously accredited field of study Telecommunications / doctoral degree study programme. Research activities of the Department of Telecommunications and Multimedia of the Faculty of Electrical Engineering UNIZA aim in the field of telecommunications at optical communication systems, broadband networks, mobile radio networks and digital signal processing. The PhD graduates in the field of Telecommunications gain deep theoretical and methodological knowledge and practical experience in key areas of telecommunications at the current state of research in the world, acquire principles of individual and team research work, research exploration, scientific formulation of problems, solutions of complex scientific problems and presentation of scientific results. They are able to analyse and solve complex and non-standard tasks in the field of telecommunications and to provide original, new solutions, to apply acquired knowledge in practice in a new, creative way. They are able to apply the acquired knowledge in various fields of science, research, industry and services in the public as well as in private sectors. The graduates are capable of following the latest scientific and research trends in telecommunications and of adding and updating their knowledge through lifelong learning process.

Theory of electrical engineering
(Field of study Theory of electrical engineering)

The doctoral study in the field of Theory of electrical engineering is designed for graduates of the second degree of university study (Master/Master of Science) who tend to the original solutions of engineering and scientific problems in the field of electrical engineering and its applications. For solving of these challenges the doctoral student utilises the latest findings of modern analytical and numerical methods, methods of mathematical and physical modelling, informatics, measurements of electric and non-electric variables, interdisciplinary methodologies, biomedical applications, as well as knowledge of other disciplines.
Prerequisites for successful completion of the doctoral degree studies are the PhD student´s ability of abstract thinking and his/her ability to apply and implement acquired knowledge when solving technical problems. The PhD student learns how to properly characterize and understand physical phenomena and experimental observations on them; he/she searches for their adequate models and is able to implement new applications in the above specified disciplines in science, research and practice. During his/her doctoral studies the PhD student acquires comprehensive theoretical knowledge, experimental skills as well as practical experience. He/she masters methodology of scientific work and is prepared for independent scientific work.

Tab. 10: Information about final thesis

Number of submitted thesis	Number of defended theses	Physical number of tutors of final thesis	Physical number of tutors of final thesis (without PhD.)	Physical number of tutors of final thesis (experts from practice)
Bachelor thesis				
177	174	110	32	10
Master thesis				
168	167	100	8	14
Doctoral thesis				
17	17	13	0	0

Students' awards

Awards of students within the university

- Dean's prize was in 2017 awarded to the following students of the 1st degree study:
  - Michal Smugala (study program Control engineering)
  - Eva Štaffenová (study program Biomedical engineering)
- Dean's prize was in 2017 awarded to the following students of the 2nd degree study:
  - Simona Moravčíková (study program Biomedical engineering)
  - Patrik Varecha (study program Electric drives)
  - Nikola Ferancová (study program Electric power systems)
  - Tomáš Miždoš (study program Multimedia engineering)
  - Jozef Valigurský (study program Process control), won the Scheidt & Bachmann Award for the best thesis in the field of transport systems
  - Peter Ždánsky (study program Process control),
  - Martin Kucharčík (study program Process control), won the price of the head of the department
  - Lukáš Gradoš (study program Telecommunications and Radio-communications Engineering)
- Awards to students for work presented at the Student scientific technical competition ŠVOS:
  - 1st place: Michal Pekár (1st degree study)
    Martin Sumega (2nd degree study)
    Michaela Šnajdarová (3rd degree study)
  - 2nd place: Róberta Vršková (1st degree study)
    Petra Urbancová (2nd degree study)
    Miroslav Pavelek (3rd degree study)
  - 3rd place: Lucia Rybovičová (1st degree study)
    Michal Staňo (2nd degree study)
    Lukáš Behúň (3rd degree study)

- Rector's prize was awarded in 2017 to:
    - Peter Pavel Sokol (1st degree study)
    - Jozef Valiček (2nd degree study)

Support for students in 2017

Scholarships (motivation, faculty)

For excellent study results the Faculty provides the scholarships to students. These scholarships were allocated in 2017:

- merit scholarships - the number of students: 82, the amount paid: 40 836 EUR,
- special scholarships - the number of students: 31, the amount paid: 13 193 EUR,
- social scholarships - the average number of recipients/students: 89,9, the amount paid: 147 165 EUR,
- trade scholarships - number 398, the amount paid: 189 479,25 EUR,
- from own resources - the number of students: 57, the amount paid: 9 182 EUR.

Consultation and advice

Students have the opportunity to consult issues related to the study with student advisors and the vice dean for education, what they are actively using.

Level of students' satisfaction with the services (accommodation, food, availability of administrative staff, library, learning environment, ICT ...)

Students expressed their satisfaction/dissatisfaction with the services through the questionnaires that are continuously processed and evaluated. Positive suggestions are used for improving the quality of the services.

SCIENTIFIC RESEARCH ACTIVITIES

Together with education, the scientific and research activities are the primary mission of the Faculty and its further growth is a necessary assumption of the future development since it is closely related to the quality of education. Scientific and research activities are at the FEE realized especially in the form of projects and are mainly based on individual activities at departments and their co-operation. One of the major outputs of scientific and research activities are scientific publications indexed in major international databases such as Web of Science and SCOPUS and international conferences supported by major professional organizations, in particular the IEEE, SPIE, IFAC, IFIP, ACM, and the IET.

The most important types of projects are international ones together with projects financed from the Structural Funds as well as projects supported from national resources through the Slovak Research and Development Agency (SRDA), the Scientific Grant Agency of the Slovak Ministry of Education, Science, Research and Sport and the Slovak Academy of Sciences (VEGA) and the Cultural and Educational Grant Agency of the Ministry (KEGA). Cooperation with industrial partners in the field of applied research is also of high importance.

Grant projects and cooperation with practice

In total 19 projects of international cooperation, 37 projects financed from national sources, 2 projects of Structural Funds and 7 other national projects have been realized at the FEE in 2017. The most important information about the projects is summarized in the following subsections. The contract-based expertise activities are also listed.

Projects of International Programmes

7th Framework Programme projects

621386: ERAChair - Enhancing Research and innovAtion dimension of the University of Zilina in intelligent transport (ERAdiate)	
Summary:	The ERAdiate project is aimed at unlocking and strengthening the research potential and promoting excellence of the University of Zilina (UNIZA) as well as the Zilina region in the field of Intelligent Transport Systems (ITS). Systematic development of human resources, effective exploitation of unique research infrastructures and advanced transformations of the institution steered towards enhanced competitiveness in the European Research Area (ERA) are the key instruments to reach the ERAdiate goals. The project focuses on sustainable development of human resources and key competences under leadership of an experienced scientist and manager, an ERA Chair Holder, and his team. Major challenges such as creating competitive environment, increasing of critical mass of excellent researchers, significant improvement of the UNIZA performance in competitive research funding, implementation of the ERA culture, contribution to growth and jobs based on the SMART specialization strategies, are addressed.
Realization:	07/2014 – 07/2019
Coordinator:	Milan Dado (DMICT), Jadislav Janoušek (DEBE)
Co-operators:	Juraj Machaj (DMICT)

607361: ADvanced Electric Powertrain Technology „ADEPT“	
Summary:	The goal of the ADEPT program is to produce a virtual development environment for E-propulsion systems and to train and establish a multi-disciplinary research network. The ADEPT program will raise the profile and to improve career perspectives for 12 ESRs, and 2 ERs, offering a high-quality structured consortium providing personalized training opportunities in E-propulsion systems and in complementary skills (i.e. entrepreneurship). An intimate involvement in all aspects of the collaboration (research, knowledge transfer, secondments, workshops) along with an extensive training program in a wide range of fields (electromagnetics, thermal, mechanical, vibro-acoustic, control, vehicle integration of E-propulsion) will allow early-stage and experienced researchers to develop the technical proficiency and complementary skills required to make significant contributions to their professional careers. Through industry-academia partnerships, ADEPT will facilitate the uptake of scientific results in E-propulsion and industrial products and solutions.
Realization:	07/2014 – 06/2017

Coordinator:	Technische Universiteit Eindhoven, Netherlands
Subcoordinator from FEE	Pavol Rafajdus (DPES)

Horizon 2020

MSCA-RISE-2016: SENSors and Intelligence in BuiLt Environment SENSIBLE	
Summary:	The goal of this project is to develop novel information sensing research and innovation approaches for acquiring, communicating and processing a large volume of heterogeneous datasets in the context of smart buildings, by building an international, inter-disciplinary and inter-sectoral collaboration network through research and innovation staff exchanges and seamless exchange of ideas, expertise, data, testbeds, and know-how. The need to sense and process ever increasing amount of data requires novel engineering that goes far beyond conventional centralised methods, where signal acquisition, communications and data processing are performed centrally and independently. Building on integrating signal acquisition, communications and information extraction into an overarching smart sensing approach, the project will provide a holistic decision support framework for non-residential buildings of the future. The key challenges of providing intelligence to the building lie in ubiquitous sensing, inside and outside the building, and connecting the sensing technology to people and outside world via meaningful decision support. Though significant research has been dedicated to developing novel sensing and instrumentation technologies, further research and innovation advances are needed to integrate physical sensing to data processing via distributed estimation and fusion approaches, giving actionable meaning to the suite of collected data. In that context, it is necessary not only to continuously monitor the environment, equipment, systems and processes, but also to sense occupants' behaviour inside and outside the building and provide timely response and feedback.
Realization:	01/2017 – 12/2020
Coordinator:	Vladimir Stankovic, University of Strathclyde, Glasgow, UK
Sub-Coordinator from FEE:	Juraj Machaj (DMICT)
Co-operators:	Milan Dado, Slavomír Matúška, Róbert Hudec, Peter Brída (DMICT), Jarmila Müllerová (IAS), Peter Holečko, Michal Gregor, Vojtech Šimák (DCIS)

636537 - H2020 High precision positioning for cooperative ITS applications	
Summary:	This project addresses the problems by combining traditional satellite systems with an innovative use of on-board sensing and infrastructure-based wireless communication technologies (e.g., Wi-Fi, ITS-G5, UWB tracking, Zigbee, Bluetooth, LTE...) to produce advanced, highly-accurate positioning technologies for C-ITS. HIGHTS platform will be a key enabler to C-ACC and Platooning. In particular C-ACC and Platooning will provide smoother driving conditions, optimization of traffic flows and high precision lane detection for more efficient guidance in urban and highway environments. The platform will increase the safety level of vulnerable road users (motorcycles, scooters, pedestrians) through bi- directional danger detection

	and by detecting slight deviations from driving courses, thus detecting danger before it occurs. The results will be integrated into the facilities layer of ETSI C-ITS architecture and will thereby become available for all C-ITS applications, including those targeting the challenging use cases Traffic Safety of Vulnerable Users and Autonomous Driving/platooning. The project will therefore go beyond ego- and infra-structure-based positioning by incorporating them as building blocks to develop an enhanced European-wide positioning service platform based on enhanced Local Dynamic Maps and built on open European standards.
Realization:	05/2015 – 04/2018
Coordinator:	Stefano Severi, Jacobs University Bremen gGmbH, Germany
Subcoordinators from FEE	Peter Brída, Juraj Machaj (DMICT)

COST projects

Action IC 1304: Autonomous Control for a Reliable Internet of Services "ACROSS"	
Summary:	Currently, we are witnessing a paradigm shift from the traditional information-oriented Internet into an Internet of Services (IoS). This transition opens up virtually unbounded possibilities for creating and deploying new services. Eventually, the ICT landscape will migrate into a global system where new services are essentially large-scale service chains, combining and integrating the functionality of (possibly huge) numbers of other services offered by third parties, including cloud services. At the same time, as our modern society is becoming more and more dependent on ICT, these developments raise the need for effective means to ensure quality and reliability of the services running in such a complex environment. Motivated by this, the aim of this Action is to create a European network of experts, from both academia and industry, aiming at the development of autonomous control methods and algorithms for a reliable and quality-aware IoS.
Realization:	11/2013 – 11/2017
National delegate:	Peter Počta (DMICT)

Action TU 1302: Satellite Positioning Performance Assessment for Road Transport "SaPPART"	
Summary:	Global Navigation Satellite Systems (GNSS) have a significant potential in the development of ITS and mobility services, expected to deliver many benefits including reducing congestion, increasing capacity and improving safety. The road sector is estimated to represent more than 50% of the GNSS market and 75% when we consider the mobility services on smartphones. However, the current lack of a pan-European certification process underpinned by agreed standards is impeding the realisation of the expected benefits. The main reason for this is the complexity of defining and assessing GNSS performance which is highly influenced by the environment and operational scenario. Although standardisation activities have been initiated in Europe on this topic, many scientific issues are still open and require a common agreement. This Action brings together experts in GNSS, ITS and mobility to address the open issues and guarantee the success of the standardisation for underpinning certification

	initiatives. The Action will provide 4 deliverables and will propose a unified framework for definition and assessment of performance for the GNSS-based positioning terminals. This framework is expected to pave the way for certified terminals, which is expected to result in a significantly accelerated use of GNSS-based ITS and mobility applications.
Realization:	11/2013 – 11/2017
Coordinator:	Peter Brída (DMICT)
Co-operators:	Juraj Machaj (DMICT)

Action IC1407: Advanced characterisation and classification of radiated emissions in densely integrated technologies (ACCREDIT)	
Summary:	The electromagnetic interference (EMI) will increase with the anticipated increase of clock speeds, frequency of operation and circuit density. Immunity levels will also decrease due to lower supply voltages and lower signal power levels. Traditionally the potential EMI sources were assessed in the frequency domain assuming static emissions.
Realization:	04/2015 –09/2019
Coordinator:	David Thomas, University of Nottingham
Co-operators:	Darina Jarinová (DMICT)

Action IC 1303: Algorithms, Architectures and Platforms for Enhanced Living Environments "AAPELE"	
Summary:	This Action aims to promote interdisciplinary research on AAL, through the creation of a research and development community of scientists and entrepreneurs, focusing on AAL algorithms, architectures and platforms, having in view the advance of science in this area and the development of new and innovative solutions.
Realization:	11/2013 – 11/2017
Coordinator:	Peter Počta (DMICT)

Action CA 15104: The Inclusive Radiocommunications (IRACON)	
Summary:	This COST Action aims at scientific breakthroughs by introducing novel design and analysis methods for the 5th-generation (5G) and beyond-5G Radiocommunication networks. Challenges include i) modelling the variety of radio channels that can be envisioned for future inclusive radio, ii) capacity, energy, mobility, latency, scalability at the physical layer and iii) network automation, moving nodes, cloud and virtualisation architectures at the network layer, as well as iv) experimental research addressing Over-the-Air testing, Internet of Things, localization and tracking and new radio access technologies.
Realization:	03/2016 – 03/2020
Coordinator:	Juraj Machaj (DMICT)
Co-operators:	Peter Brída (DMICT)

Action MP1401: Advanced fibre laser and coherent source as tools for society, manufacturing and lifescience	
Summary:	Fibre lasers are in the class of rapidly developing lasers with many applications for several reasons. Within the Action we expect an increase of innovations in this field, in particular the coverage of wavelengths from 3 to 6 micrometers,

	applications in the near-infrared region and increase of output transmission of fibers for a better coverage of visible and ultraviolet regions for biophotonics and improvement of health care.
Realization:	12/2014 - 12/2018
Coordinator:	Daniel Káčik (DPh)
Co-operators:	Ivan Martinček, Dušan Pudiš, Norbert Tarjányi (DPh)

Action BM 1309: European network for innovative uses of EMFs in biomedical applications "EMF-MED"	
Summary:	The Action will provide a cooperative framework to support the research on beneficial biological effects of non-ionizing electromagnetic fields (EMFs) and their use in biomedical applications. Research on biological effects of EMFs has traditionally focused on health risks. Inspired by promising recent studies on useful biomedical EMF interactions and applications, this Action will focus on beneficial effects, aiming for breakthrough results, new discoveries and innovative biomedical technologies. The Action will provide a better understanding of underlying physical and biological interaction mechanisms, related to both cancer and non-cancer applications, filling the gaps in the present state of knowledge. Ultimately, the Action will aim to contribute to development and optimization of innovative EMF-based medical devices and procedures, which will be safer, more efficient and less invasive. Interdisciplinary of the proposed topic and significance of the expected outcomes require a concerted research network at the European level.
Realization:	04/2014 – 04/2018
Coordinator:	Ján Barabáš (DEBE)
Co-operators:	Roman Radil (DEBE)

Action CA15213: Theory of hot mater and relativistic heavy-ion collisions	
Summary:	This COST Action „Theory of hot mater and relativistic heavy-ion collisions" (THOR) creates a theoretical community platforma counterpart to the ongoing vigorous exceptional potential in this field of theoretical research. THOR will pioneer novel approaches to the theoretical understanding of the properties of QCD from first principles and on the interpretations of these properties by effective models and numerical simulations of the system`s evolution. By this, THOR will provide new insights on the paramount questions of the field. Therefore THOR aims at bringing together excellent researchers in order to pinpoint and discuss the challenges that the field meets currently and in the near future for creating a vibrant, innovative and world-leading pan-European research environment.
Realization:	10/2016 - 16/2020
Coordinator:	Marcus Bleicher, Frankurt
Co-operators:	Ivan Melo (DPh)

TU 1305: Social networks and travel behaviour	
Summary:	COST Action TU1305 aims to initiate a new collaboration framework for the various EU research groups that develops a new transport paradigm based upon ICT social networks and their subsequent travel behaviour in the urban environment. Our goals are to explore ways in which social activities become

	mobilised in space, identify how social ties affect the integration of local public transport into urban patterns, and develop a rigorous conceptual framework for new ideas and methodologies.
Realization:	03/2014 – 03/2018
Coordinator:	Pnina Plaut, Technion, Israel Institute of Technology, Haifa, Izrael
Co-operators:	Peter Holečko (DCIS), Rein Ahas, Sven Kesselring, Isabelle Thomas, Lucia Cristea, ...

ERASMUS projects

2014-BE02-KA200-000462: Strategic Partnership: Early identification of STEM readiness and targeted academic interventions (readySTEMgo)	
Summary:	Early identification of problems in STEM (Science-Technology-Engineering-Mathematics) education especially for the first year technical university students and search for ways to help improve the current state.
Realization:	10/2014 – 09/2017
Coordinator:	Greet Langie (KU Keuven)
Co-operators:	Peter Hockicko, Gabriela Tarjányiová, Marián Janek (DPh)

International Scientific and Technological Co-operation Projects (MVTS)

RSF 14-49-00079: New methods and algorithms of combined signal and image processing with unknown parameters in promising radars and communication systems	
Summary:	The project solves the issue at the Moscow Energy Institute at the National Research University within the Department of Radio Equipment and Antenna systems.
Realization:	10/2014 – 12/2017
Coordinator:	Yurij Kutojans, Univerzita Le Mans, France
Co-operator:	Branislav Dobrucký (DME)

Other International Research Projects

02–1-1097-2010/2018: Study of polarization phenomena and spin effects at the Nuclotron accelerator (JINR)	
Summary:	The project's aim is to study the spin structure of light nuclei and the mechanism of reactions in which they participate in the inner target of the Nuclotron as well as in the extracted beam in the region of medium energies.
Realization:	01/2017 - 31/2017
Coordinator:	Marián Janek (DPh)
Co-operators:	Marek Veveričík (DPh)

Technical safety of the GP JAZZ	
Summary:	There are cases of controlled processes, which can threaten the assets located within their scope. Currently, the safety of a controlled process is evaluated indirectly by the evaluation of safety integrity of the control system. An important operation during the evaluation of the safety of a control system is

	the evaluation of failures effects on its safety and that of on the safety of the controlled process.
Realization:	11/2017 – 12/2018
Coordinator:	Karol Rástočný (DCIS)

Other International Non-research Projects

EPPCN Agreement KE3202/EPPCN	
Summary:	The EPPCN Member (Ivan Melo) acts as CERN`s communications point of contact in the Member State or Associate Member State in which he/she resides and cooperates in the promotion of CERN`s mission and the demonstration of its importance at the national level.
Realization:	01/2017-12/2020
Coordinator:	Arnaud Marsolier, CERN
Co-operators:	Ivan Melo (DPh)

PROJECT of the EUROPEAN PHYSICAL SOCIETY INTERNATIONAL PHYSICS MASTERCLASSES 2017 http://www.physicsmasterclasses.org	
Summary:	High school students spend one day with physicists of elementary particles during which they learn to evaluate real experimental data from the LHC accelerator.
Realization:	annually
Coordinator:	Ivan Melo (DPh)
Co-operators:	Gabriela Tarjányiová, Mikuláš Gintner, Beáta Trpišová, Jozef Kúdelčík, Juraj Remenec (DPh)

Projects of National Programmes

Slovak Research and Development Agency (SRDA)

APVV-15-0152: Research of physical properties and growth kinetics of black silicon layers	
Summary:	Dominant aims of the project are focused on basic experimental, applied and theoretical research of black Si (c- Si and poly-Si) consisting of nanocrystalline objects. The research is oriented on i) forming of black Si in chemical wet solutions as well as in plasma using catalytic overlayer, ii) black Si layer growth kinetics, iii) research and modelling of basic physical parameters of black Si structures – such as optical, electrical and morphological ones, and iv) surface passivation of formed Si nanocrystalline objects using suitable technology (-ies) leading to the long termed durability of their properties. The project solves i) choice of suitable surface catalytic overlayer and chemical composition of used solutions, ii) formation of modified surface layers using catalytic overlayer and their physical properties also on GaAs, iii) formation and testing of pn black c-Si solar cells, and iv) antibacterial effect of black c-Si structures. Results of the above mentioned research will be compared with results obtained on the porous Si structures prepared electrochemically without catalytic overlayer.
Realization:	07/2016 – 06/2019
Coordinator:	Emil Pinčík, Institute of Physics, Slovak Academy of Sciences

Sub-Coordinator from FEE:	Jarmila Müllerová (IAS)
Co-operators:	Stanislav Jurečka, Zdeněk Dostál, Gabriel Cibira, Libor Ladányi, Ľubomír Scholtz (IAS)

APVV SK-CN-2015-0007: Progressive electric drives for automobile applications tolerant to system failures	
Summary:	The project deals with the operational safety of electric drives in critical applications in automotive and electric cars. The operational safety of the drive is assessed in the project based on its fault tolerance, in order to achieve an operation that does not allow the total system crash and fail, but the system will be able to operate in a reduced power and limited performance. The solved project captures the findings of current trends in automotive development, it contains a detailed analysis of the individual parts of the system, especially with regard to the use of modern electrical machines of the reluctance type (SRM and SRMPM), the sensors used and the methods of drive control. The project reflects the problems created by the global effort of the automotive industry to reduce production costs and thus reduce the cost of cars, but at the same time to improve the properties of electric drives by using modern electric machines with new, progressive methods of their control.
Realization:	1/2016 – 12/2017
Coordinator:	Pavol Makyš (DPES)
Co-operators:	Marek Štulrajter, Juraj Makarovič, Pavel Sovička (DPES)

APVV-15-0571: Research of the Optimum Energy Flow Control in the Electric Vehicle System	
Summary:	The project encompasses research into the multi energy storage system for a new generation of electric mobility applications focused on optimal use of energy stored in the primary electrochemical battery. The main criterion is thereby ensuring maximum range of the electric vehicle, at a given stored energy, which will be ensured by utilization of the recovery energy processes in changing the driving dynamics of the vehicles and optimum management of the bidirectional energy flow between the storages (batteries, supercapacitors) and traction drives. The main output of the project will be the simulator traction drive based on two-energy storage system designed to practical testing and optimization algorithms of the flow control and distribution of the power within the on-board network. Another output will be the software packets to manage and monitor on-board power system, including fault conditions and measurements of the relevant traction and energy quantities. The obtained results will be practically utilized in the design of the on-board power systems with optimal use of energy in the newly built university laboratory to teaching specialists in the field of electromobility.
Realization:	10/2016 – 09/2020
Coordinator:	Peter Drgoňa (DME)
Co-operators:	Branislav Dobrucký, Slavomír Kaščák, Michal Praženica, Michal Frivaldský, Roman Koňarik, Marek Paškala (DME)

APVV-15-0462: Research on Sophisticated Methods for Analysing the Dynamic Properties of Respiratory Epithelium's Microscopic Elements	
Summary:	The project is focused on research of sophisticated methods based on image analysis, intended to improve the objectivity, efficiency and automation of diagnostic processes in medicine. Its main objective is to identify the dynamic properties of biological objects of interest, which are the cilia of respiratory

	epithelium. Movement of such objects will be captured using high-speed video microscopy, while recording and data analysis will be carried out by high-power computer system. The recorded data will be then processed by our software system designed for segmentation of the objects of interest. The main criterion for segmentation will be the identification of pathological structures that are, due to disease or structural changes, static and do not contribute to cilia's primary function in vivo. Identification and subsequent analysis of segmented regions will notably contribute to an accurate specification of patient's diagnosis, and thus to determination of early and effective therapy. Although the results of the project are intended to be applied in the medical field, the project is mainly about the research of optimal technical solutions for modern diagnostic methods in medicine also in terms of international research in this area. The dominant project outcome will be the device enabling the analysis of high-speed videos.
Realization:	10/2016 – 09/2020
Coordinator:	Libor Hargaš (DME)
Co-operators:	Dušan Koniar, Miroslav Hrianka, Anna Simonová, Pavel Pavlásek, Peter Čuboň, Zuzana Loncová, Tomáš Uriča, Michal Taraba (DME)

APVV-15-0396: Research of Perspective High Frequency Converter Systems with GaN Technology	
Summary:	The project is focused on the issue of increasing the efficiency and power density of power semiconductor systems, while reducing the electromagnetic interference, which ultimately reduces negative environmental aspects of their application. Its main task is to research the phenomena related to applications of advanced semiconductor structures based on GaN transistors in power electronic systems, including research of commutation techniques applied in the switching frequency range of MHz units. Investigators will be outgoing from the results of the projects addressed at the national (ELTECO Ltd.), respectively international level (Panasonic Gmhb Lueneburg SNR). Another task of the project is to research phenomena affecting the efficiency of the practical application of those facilities. Specifically, the economic burden of production, reduction of CO2 and return on investment. The project also highlighted the issue of the reliability analysis and research methodology for the estimation of mean lifetime of power electronic systems based on GaN technology. At the same time, the project deals with draft measures on the possibility of extending the operation of such systems through multi-level multi-physics simulations. The main outcome of the project will be functional sample of the system meeting the declared goals, intended for direct use in industrial applications of electromobility application or respectively of wireless transmission of electricity. Another output will be a set of knowledge and measures for the optimal design of these systems, reducing the failure rate and lifetime extensions. Based on preliminary discussions with companies ELTECO Ltd. and Delta Electronics, it can be assumed rapid utilization of the results obtained in industrial practice.
Realization:	10/2016 – 09/2020
Coordinator:	Michal Frivaldský (DME)
Co-operators:	Pavol Špánik, Anna Kondelová, Anna Simonová, Ondrej Hock, Jozef Šedo, Peter Čuboň, Boris Kozáček, Michal Prídala (DME)

APVV-0314-12: Research and Development of New Generation of Power Supplies Based on Converters with High Power Density, High Efficiency, Low EMI and Circular Energy	
Summary:	Project is focused on research and development of new generation of switched mode power supplies, which are based on LLC, LLCLC and LCTLC topology with high power density and multifunction output and with double half-bridge DC/DC converter characterized by low circulating energy and low EMI. Co-operation with Elteco.
Realization:	10/2013 – 09/2017
Coordinator:	Branislav Dobrucký (DME)
Co-operators:	Pavol Špánik, Peter Šindler, Peter Drgoňa, Michal Frivaldský, Michal Praženica, Tomáš Laškody, Pavol Štefanec, Boris Kozáček, Ondrej Hock, Anna Simonová, Slavomír Kaščák, Anna Kondelová (DME)

APVV-0433-12: Research and Development of Intelligent System for Wireless Energy Transfer in Electromobility Application	
Summary:	The project is focused on problem of systems for wireless energy transfer, representing progressive solution for supplying of mobile and industrial devices. Task of this project is research of major effects on efficiency of systems for wireless energy transfer, usable for realization of charging points in the area of electromobility.
Realization:	10/2013 – 09/2017
Coordinator:	Pavol Špánik (DME)
Co-operators:	Libor Hargaš, Peter Drgoňa, Michal Frivaldský, Dušan Koniar, Michal Praženica, Ondrej Hock, Roman Mažgút, Martin Galád, Viliam Jaroš, Marek Píri (DME)

APVV-15-0441: Measurement system with optical sensor for systems Weight In Motion	
Summary:	Proposed project of applied research will be focused on design, optimalization and creation of a device for weight measurement of a vehicle (or its axle) in movement according to the currently valid traffic regulations on the road or highway. Project will discuss the selection of proper sensor hardware for the system, its mounting into existing solutions Measure-in-Motion® previously designed by project partner and compatibility of the used optical sensor output with the interface of the existing processing unit.
Realization:	07/2016 – 06/2020
Coordinator:	Daniel Káčik (DPh)
Co-operators:	Norbert Tarjányi (DPh), Milan Dado (DMICT), Aleš Janota, Juraj Spalek, Marián Hruboš, Rastislav Pirník, Peter Vestenický, Vojtech Šimák, Dušan Nemec, Jozef Hrbček (DCIS), Juraj Maciak, Jakub Horka, Milan Rysula

APVV-16-0006: Automated robotic assembly cell as an instrument of concept Industry 4.0	
Summary:	Global aim of the project is design of new modern concept of automated robotic assembly cell consisted of mobile manipulator, whereby manipulation task is performed by compliant manipulator. This aim is divided into partial tasks - design of mobile platform with capability of autonomous movement in unknown environment, concept of compliant manipulator with enhanced sensorial systems, which allows the manipulator better modelling of environment and interactions with human, and finally mutual cooperation of both modules to ensure the safe and stabile manipulation with objects also during the movement of robot. A suitable design of hardware and development of software will lead to construction of such unique concept, which combines

	actual trends in R&D in robotics.
Realization:	07/2017 – 06/2020
Coordinator:	František Duchoň (FEI STU)
Co-operators:	Aleš Janota, Juraj Spalek, Vojtech Šimák, Emília Bubeníková, Michal Gregor, Dušan Nemec, Jozef Hrbček (DCIS)

APVV-14-0519: Smart Textiles and Clothing for Mobile Monitoring of Human Vital Functions - INTELIGENTEX	
Summary:	Basic idea of the project is to contribute to implementation of platforms of the future based on wireless monitoring and transfer of human vital functions with a possibility of subsequent healthcare in real time. The project will focuse on preparation of functional components of smart clothing, development and testing innovative algorithms for analysis, evaluation, display and storage of the monitored biomedical signals and preparation of a prototype of smart clothing. Anticipated result of the project will be a prototype of smart clothing with incorporated textile sensors, textile electrodes with microelectronics, communication interface and terminal with user interface.
Realization:	07/2015-06/2017
Coordinator:	Ladislav Janoušek (DEBE)
Co-operators:	Branko Babušiak, Ján Barabáš, Štefan Borik, Michal Gála, Roman Radil (DEBE), Róbert Hudec, Slavomír Matuška, Martin Paralič, Martin Vestenický (DMICT)

APVV-16-0190: Research of Integration of functional system of TEXtiles for monitoring of BIO data for achievement of synergy of health, comfort and human safety	
Summary:	The main goal of the interdisciplinary projects is significant innovation and development of novel intelligent textile structures in European market, with use of progressive technologies in form of low temperature plasma and further application of nanotechnologies and integrated intelligent system for monitoring of biomedical data. The results of the research task will be prototype of intelligent mattress topper EKG-SmartSheet with increased hygienic parameters, which will be able to monitor human biomedical data in real time. By implementation of the project new possibilities to improve adequate healthcare and social conditions for post productive generation in Slovakia and EU will be created. Proposed project is reaction on the prognosis of negative social development in Slovakia and EU in next 20-30 years, with aim to improve possibilities for sustainability of quality of life and health for significant part of population.
Realization:	07/2017-06/2020
Coordinator:	Dana Rástočná Illová (VÚTCH - CHEMITEX,spol. s r.o.)
Co-operators:	Ladislav Janoušek (coordinator of FEE), Branko Babušiak, Ján Barabáš, Štefan Borik, Michal Gála, Roman Radil (DEBE), Róbert Hudec, Slavomír Matúška, Martin Paralič (DMICT)

APVV-16-0505: The short-term PREDICtion of photovoltaic energy production for needs of pOwer supply of Intelligent BuildiNgs – PREDICON	
Summary:	The proposed project is aimed at the developing of method for a very short-term prediction of photovoltaic (PV) power plant output with timescale ranging from 5 to 30 minutes. To forecast the intensity of solar irradiance, as the main factor affecting the performance of PV power plant, the algorithm using analysis of recorded image data representing cloudiness motion above the installation site of PV power plant will be proposed. To achieve the best

	accuracy of output prediction of PV power plant, local factors affecting solar irradiance and PV power plant operation will be identified. The analysis will be done in order to define correction factors for the adaptation of predicted values of solar irradiance determined by the proposed algorithm to current local conditions at the installation site of PV power plant. The functionality and accuracy of proposed method will be verified by the help of created PV power plant mathematical model as well as by measurements performed on real PV power plant.
Realization:	07/2017-06/2020
Coordinator:	Róbert Hudec (DMICT)
Co-operators:	Miroslav Benčo, Patrik Kamencay, Peter Sýkora, Slavomír Matúška, Martin Paralič, Martin Vestenický, Daša Tichá, Ján Hlubík, Miroslav Uhrina, Martin Šinko (DMICT), Peter Braciník, Marek Novák (DPES)

APVV-14-0560: PatRec- Resistive Switching Structures for Pattern Recognition	
Summary:	Verification of the possibility of application of memristors for realisation of logic circuits. Prepared memristors will be connected to simple logic circuits for implementation of fuzzy logic and switching functions. Final goal of the project is to demonstrate ability of memristor circuits to recognize patterns based on experiments and computer models.
Realization:	07/2015-06/2018
Coordinator:	Karol Frohlich (Slovak Academy of Sciences), Martin Klimo (Faculty of Management Science and Informatics)
Co-operators:	Roman Jarina, Michal Kuba, Michal Chmulík (DMICT)

APVV-15-0464: Efficiency Improvement of Electrical Power Transmission in Slovakia	
Summary:	The project deals with research and development of power losses caused by asymmetrical impedance of selected electric components (transformers, catenary, compensation chokes) of electrical power grid in Slovakia. The aim is to develop a series of steps and technology needed to determine impedance and admittance matrixes and to minimize the power losses due to the asymmetry of the components. Power losses optimization is still the most effective way of improving the energy resources utilization. Importance of such subject is supported by European Commission statement from 10/23-24/2014 aiming to the climate and energy policies frame, which expresses minimum 27% improvement of energy efficiency by 2030.
Realization:	1/2016 – 12/2020
Coordinator:	Juraj Altus (DPES)
Co-operators:	Marek Roch, Marek Höger, Alena Otčenášová (DPES), Jozef Lago, Ľuboš Pavlov

Scientific Grant Agency of the Slovak Ministry of Education, Science, Research and Sport and the Slovak Academy of Sciences (VEGA)

VEGA 1/0676/17: Research of electrical and optical properties of nanostructured semiconductor interfaces	
Summary:	In the project questions of experimental research and theoretical modelling of electrical and optical properties of nanostructured semiconductor-dielectric systems and porous layers on Si prepared by etching with assistance of electric field were solved. New theoretical methods of analysis of nanostructural and optical properties of investigated systems were developed, which were based on the implementation of Drude-Lorentz formalism, methods of approximation

	of effective medium and modelling of Raman scattering. For the completion of the experimental base, a project for the construction of an experimental device for measuring optical properties and for measuring the electrical properties of semiconductor samples was developed and implemented.
Realization:	01/2017 – 12/2019
Coordinator:	Stanislav Jurečka (IAS)
Co-operators:	Robert Menkyna, Ľubomír Scholtz (IAS), Michaela Solanská (DMICT)

VEGA 1/0491/14: Optoelectronical and optical devices with photonic structures	
Summary:	Project is focused on fabrication of photonic and optic structures for optoelectronical devices using maskless lithographic techniques. These lithographic methods and their combination with imprinting technique allow fabrication of photonic structures with period of order of few hundreds of nanometers and various optical structures. These will be patterned in the surface of optoelectronical and optical devices and in polydimethylsiloxane followed by direct application on light emitting diodes and waveguides. In combination with optimization of optical properties in simulation program, there is a great opportunity to develop unique optoelectronical and optical devices.
Realization:	01/2014 – 12/2017
Coordinator:	Dušan Pudiš (DPh)
Co-operators:	Daniel Káčik, Norbert Tarjányi, Ľuboš Šušlik, Ivana Lettrichová, Peter Gašo, Mária Pardelová, Jana Ďurišová (DPh)

VEGA 1/0510/17: Research and characterization of nanostructures by acoustic spectroscopy	
Summary:	The project is focused to the utilization of acoustic spectroscopy methods to study the structural, transport and relaxational properties of selected materials, forward for the application in the electrical engineering.
Realization:	01/2017 – 12/2019
Coordinator:	Jozef Kúdelčík (DPh)
Co-operators:	Peter Bury, Peter Hockicko, Ivan Bellan, Štefan Hardoň, Marek Veveričík, Emil Jahoda, Jana Bírešová (DPh)

V-1/0602/17: Ultra-high-cycle fatigue of welds with nanostructured layers	
Summary:	The aim of the project is the analysis of constructional and insulation condition of transformers using the selected frequency and time measurement methods. The focus will be to determine the parameters of the winding and insulating elements of transformer through simulations, physical models and direct experimental measurements at different degradation effects. Based on a synthesis will create a new methodology for analyzing the condition of specific types of transformers using the specified measuring methods with increased originality and innovation and on this basis will be create a new integrated system of diagnostics with the possibility of analysis and classification of possible faults on power transformers.
Realization:	01/2017 – 12/2019
Coordinator:	Miroslav Gutten (DMAEE)
Co-operators:	Martin Brandt, Milan Chupáč, Daniel Korenčiak, Matej Kučera, Milan Šebök, Milan Šimko (DMAEE)

VEGA 1/0957/16: Research and Development of Novel Construction of Switched Reluctance Machines for Automotive Traction Applications	
Summary:	This project deals with scientific research of modern electrical drive with switched reluctance motor (SRM) and with investigation of its performances and parameters for traction application in electrical vehicles. In the frame of this project, the detail analysis of a new SRM construction design and optimized construction of SRM will be carried out to obtain the best performances from point of view efficiency, distance range and reliability of electrical car. The modern methods of design as finite element method will be used for these SRM. The research of new control algorithms for this drive will be analysed with cooperation with power converter to obtain best efficiency for all working range. On the base of scientific research of these motors, some recommendations will be given for their manufacturing.
Realization:	01/2016 – 12/2018
Coordinator:	Pavol Rafajdus (DPES)
Co-operators:	Valéria Hrabovcová, Pavol Makyš, Vladimír Vavrúš, Pavel Lehocký, Juraj Makarovič, Adrián Peniak, Milan Diko (DPES)

VEGA 1/0610/15: Scientific research of fractional winding of synchronous machines with permanent magnets	
Summary:	This project will address - Research of synchronous machines with simple design, which will be optimized with respect to cost reduction of construction materials, where the geometry should, according to the latest research, tend to concentrated windings, - Increasing the efficiency of the machine by reducing the coil dimensions, by the possible use of superconducting coils as well by reduction of losses in the magnetic circuit. To achieve these two main objectives it is necessary in this project - Extend the theory of the windings to the windings with concentrated coils
Realization:	2015 – 2017
Coordinator:	Valéria Hrabovcová (DPES)
Co-operators:	Pavol Rafajdus, Pavol Makyš, Juraj Makarovič, Adrián Peniak, Milan Diko, Lukáš Gorel (DPES)

VEGA 2/0076/15: Research of black silicon structures	
Summary:	Project is oriented towards basic experimental and theoretical investigation of black silicon starting with its preparation chemically in liquid media and/or using high frequency plasma, electrochemistry of formation of such structure, investigation of basic properties of the structure, passivation of formed nano-crystalline objects using proper technology leading to tunnelling dielectric layers, research of electrical transport mechanisms in passivated structures, its structural and optical properties. The structures are prepared on the following substrates: i) c-Si, ii) poly-Si, and ii) proper type of amorphous Si and/or mc-Si thin film. The project will resolve selection of a proper type of doping of surface area of black silicon in order to form pn junction, to study its electrical properties and to fabricate corresponding black silicon based solar cell.
Realization:	01/2015 – 12/2017

Coordinator:	Emil Pinčík, Institute of Physics, Slovak Academy of Sciences, Bratislava
Sub-Coordinator:	Jarmila Müllerová (IAS)
Co-operators:	Stanislav Jurečka, Zdeněk Dostál, Gabriel Cibira, Libor Ladányi, Ľubomír Scholtz (IAS)

VEGA 1/0278/15: Research and development of optical waveguides and waveguide structures from polydimetylsiloxane	
Summary:	Design and development of waveguides, fibers and waveguide structures from polydimetylsiloxane with the aim to use them for photonic and sensor applications. Optical properties of waveguides and structures will be investigated in the visible and the near infrared region of the electromagnetic spectrum. Photonic elements on the basis of polydimetylsiloxane will be designed such as tunable waveguide optical attenuators, optical waveguide power limiters, optical fiber switches and optical planar and fiber sensors.
Realization:	01/2015 – 12/ 2018
Coordinator:	Ivan Martinček (DPh)
Co-operators:	Dušan Pudiš, Daniel Káčik, Norbert Tarjányi, Ľuboš Šušlik, Ivana Lettrichová, Peter Gašo, Daniel Jandura (DPh)

VEGA 1/0123/15: Ultra-high-cycle fatigue of welds with nanostructured layers	
Summary:	The aim of the project is to examine the procedure for evaluation of weld quality with nanostructured layers when applied ultra-high-cycle fatigue process.
Realization:	01/2015 – 12/2017
Coordinator:	Otakar Bokůvka (Faculty of Mechanical Engineering)
Co-operators:	Dagmar Faktorová (DMAEE)

VEGA 1/0928/15: Research of electronic control of power transmission and motion of road ICE- hybrid HEV and EV vehicles	
Summary:	The project deals with research in the area automotive electronics - Autotronics - identifying structures and advanced management methods of power transmission and motion ICE internal combustion vehicles, hybrid HEV and EV using their controllers and fieldbus (CAN) communication with them. Then there is the research of embedded processor systems for the electronic transmission control of performance of HEV and EV vehicles with central and distributed electric propulsion systems, as well as research into the power structure for optimal energy management and vehicle research and development environment for programming autotronics systems. The research results will be used for the education of specialists for the automotive industry, where it appears at present scarcity.
Realization:	01/2015 – 12/2017
Coordinator:	Branislav Dobrucký (DME)
Co-operators:	Pavel Pavlásek, Ondrej Hock, Martin Galád, Pavol Štefanec, Viliam Jaroš, Boris Kozáček, Roman Koňarik (DME)

VEGA 1/0479/17: Research on optimal approaches to managing energy transfer in systems with accumulation elements	
Summary:	The core of this project is research of relevant phenomena which influence the effectivity of energy management process in systems with accumulation elements. Such systems are represented mainly by dashboard network of electric cars and accumulation nodes of energetic systems. Starting point for the project will be the analysis of characteristic properties of each individual way how to accumulate energy with subsequent selection of optimal accumulation system for transfer process, with acceptance of allowed environmental impact. Another important aspect will be the research of possibilities how to improve the effectiveness of mentioned process using optimal energy flow into accumulation node, and implementation of obtained results through sophisticated converter technologies with ultrahigh switching frequencies. During the project solution, proven scientific methods based on computer simulations will be used, both for analysis in temporal domain as well as in 3D analysis of processes in electrochemical system.
Realization:	01/2017 – 12/2019
Coordinator:	Pavol Špánik (DME)
Co-operators:	Michal Frivaldský, Pavel Pavlásek, Peter Drgoňa, Anna Kondelová, Peter Šindler, Michal Prídala, Michal Taraba, Juraj Adamec, Ján Morgoš, Rastislav Štefúň (DME)

VEGA 1/0160/17: Pharmacological Influence of defense mechanisms of the airways, inflammation and remodeling by flavonol derivatives in conditions of experimental allergic asthma	
Summary:	The project is linked to projects VEGA 1/0073/08 a VEGA 1/0020/11. Their solution has shown the benefit of administering flavonoid mixtures on sensitivity of cough, bronchoconstriction and inflammation in conditions of experimentally induced allergic asthma. Solution of the current project will bring new knowledge about the effect of other derivatives of polyphenols from the flavonol group, in which an antiasthmatic action is expected. Searching for new sources of substances with complex anti-asthmatic action, substances that act as bronchodilatories, anti-inflammatories and anti-remodeling is trend of current experimental research on allergic asthma. The project solution will provide a comprehensive view of the activity of the monitored substances: examination of all basic defense mechanisms of the airways (cough, bronchoconstriction, mucociliary clearance), allergic inflammation (using the determination of inflammatory, immune cells, inflammatory cytokines and chemokines, etc.), and the degree of airway remodeling.
Realization:	01/2017 – 12/2020
Coordinator:	Soňa Fraňová, Institute of Pharmacology JLF UK Martin
Co-operators:	Libor Hargaš, Dušan Koniar, Anna Simonová (DME)

VEGA 1/0367/15: Research and development of a new system for autonomous robot trajectory control	
Summary:	The scientific project is focused on the implementation of hybrid sensors – Inertial Navigation System (INS), into robot's control. A system with such a control can acquire a precise position of robot's effector in space. The application can be used for calibration of a robotic workplace. The calibration is necessary in order to adapt a simulated model of a production device to real geometric conditions. A simulation model of a production device and robot programming set represent an accurate representation of reality. However, an

	absolute correspondence with the reality cannot be expected. The deviations of reality from simulation occur because of several reasons. The implemented INS will be used for calibration without the use of calibration equipment, thereby enabling a significant simplification of calibration in praxis.
Realization:	01/2015 – 12/2017
Coordinator:	Pavol Božek, Institute of applied informatics, automation and mechatronics, MTF
Sub-Coordinator:	Rastislav Pirník (DCIS)
Co-operators:	Vojtech Šimák, Dušan Nemec (DCIS)

VEGA 1/0427/15: Access Network Structures and Their Research in Terms of Performance and Time Characteristics	
Summary:	Research project will work on modelling and emulation of access network in terms of required demands for network services (audio, video and data) in the relation to the qualitative and quantitative system parameters. Performance and time characteristics will be the subject of an analytical model. Necessary part of research project will be the technological model realized by modern network technology (including a modern emulator AVALANCHE 290 which allows to realize the real network traffic in the access network), the content of which will be a separate access network. The goal of proposed research project is the resolving of QoS problem for critical (real-time) network services (voice and video traffic). Because the part of the research project will be the real access network, the obtained results will be directly applicable in practice.
Realization:	01/2015 – 12/2017
Coordinator:	Vladimír Hottmar (DMICT)
Co-operators:	Bohumil Adamec, Martin Vestenický, Ladislav Schwartz, Daša Tichá, Peter Kortiš (DMICT)

VEGA 1/0263/16: Research of integrated localization system based on wireless systems and sensors implemented in smart mobile devices	
Summary:	With the increasing amount of localization based services (LBS) also demands on the quality of positioning systems increase. Providers try to provide such LBS without restrictions about environment in which the user is located. High demands on the quality can be fulfilled only by the systems that utilize combination of all available technologies. The project is focused on proposal of positioning system, which will integrate systems commonly used for positioning of mobile device (MD) - smartphones. Systems that are assumed to be utilized are based on wireless networks, GNSS and sensors which are integrated in MD. The project will be focused on research of localization algorithms based on fingerprinting method, which will utilize data from available sensors in order to improve the method performance. Crucial part of the research is algorithms development that will integrate all available data in order to estimate position of MD. Proposed algorithms will represent core of the developed integrated positioning system.
Realization:	01/2013 – 12/2015
Coordinator:	Peter Brída (DMICT)
Co-operators:	Vladimír Wieser, Juraj Machaj, Ján Račko, Michal Mlynka, Martin Paralič, Darina Jarinová (DMICT)

Cultural & Education Grant Agency of the Slovak Ministry of Education, Science, Research and Sport (KEGA)

KEGA 003TU Z-4/2015: Development of conceptual thinking at technical universities	
Summary:	The goal is to create materials for modern interactive methods and their application in the teaching process. These methods will make the study of physics easier and will help students develop their imagination, creativity and will fill in missing logical and abstract thinking.
Realization:	01/2015 – 12/2017
Coordinator:	Peter Hockicko (DPh)
Co-operators:	Jozef Kúdelčík, Gabriela Tarjányiová, Marián Janek (DPh)

KEGA 012TU Z-4/2017: Interactive methods in Physics Education at Technical Universities	
Summary:	The goal is to create a comprehensive study material for core physics subjects of new study programmes for the bachelor degree at four faculties of the Technical University in Zvolen and at six faculties of University of Žilina. This material will use modern interactive teaching methods
Realization:	01/2017 – 31.12.2019
Coordinator:	Ľuboš Krišťák (TU Zvolen)
Sub-Coordinator from FEE:	Peter Hockicko (DPh)
Co-operators:	Jozef Kúdelčík, Gabriela Tarjányiová, Marián Janek (DPh)

KEGA 031ŽU-4/2016: Implementation of Geometric product specifications (GPS) into the teaching process of engineering study programs and putting them into the technical practice	
Summary:	The goal of the project is modernisation, improving and supplementing of teaching contents and form within the education of study programs at universities of technical orientation and support for students to achieve such level of knowledge's and skills, which increase their competitiveness at the labour market. The project deals with the implementation of the latest findings introduced in the latest international technical standards in the field of Geometrical product specifications (GPS) into the contents of teaching materials of subjects as Engineering Drawing, Design, Methodology of Design, Engineering metrology and Metrology. The project is multidisciplinary. It is aimed at problems of designing and tolerances prescription for dimension, for geometry and form prescription within the product designing. It is also aimed at the field of geometrical quantities measuring and evaluation as well as at using of latest measuring equipment. The goal of the project is creating of educating program and publishing of textbook for university students. The book will be supplemented with digital annexes available at the information system with exercises assignments and results. Within the annexes there will be teaching tools and tests for students. One part of exercises will be in English. Another result of the solution of the project will be completion of laboratory for 3D measurement. That will be a benefit for students preparing themselves for future occupation in international firms – mainly in the field of automobile and bearings industry.
Realization:	01/2016 – 12/2018
Coordinator:	Jozef Bronček, Faculty of Mechanical Engineering UNIZA
Co-operators:	Ivan Litvaj (DPES)

KEGA 008ŽU-4/2015: Innovation of HW and SW tools and methods for laboratory education with focus on ICT security aspects in safety-critical process control applications	
Summary:	The goal of the project is to focus on the research in the field of evaluation of cryptographic mechanisms used for safety-critical process control applications based on modelling approach. The outcomes will be presented in a form of collective publications and a prepared monograph, as well. One of the objectives of the project is also to build up workplaces in AB 315 and AB 320 laboratories for the needs of education of subjects focusing information security.
Realization:	01/2015 – 12/2017
Coordinator:	Mária Franeková (DCIS)
Co-operators:	Peter Holečko (Vice Coordinator), Karol Rástočný, Peter Vestenický, Emília Bubeníková, Alžbeta Kanáliková, Rastislav Pirník, Marián Hruboš, Kamila Kršíková, Jozef Balák (PhD. student) (DCIS) , Peter Peniak (Continental Matador Rubber, s,r.o. Púchov) Martin Šuták, (Aliga, s.r.o. Martin)

KEGA 034ŽU-4/2016: Implementation of modern technologies into education with focus on safety PLC control	
Summary:	The project is focused on bridging the shortcomings resulting from the growing demands of industry for the theoretical knowledge and practical experiences in deployment of control systems with safety PLC. The project aim is to build a laboratory in which control systems with safety PLC will be together with the physical models allowing simulation of real situations in industry. The laboratory will allow the emergence of a new subject "Control systems with safety PLC" and subsequent solution of bachelor's thesis, master's thesis and dissertations. Under the project will be developed the teaching materials supported by examples. This allows to make studying more attractive and to train students for the practical needs and finally to develop cooperation with practice primarily in the area of consultation about achieving the required safety integrity level (SIL - Safety Integrity Level) of realized applications.
Realization:	01/2016 – 12/2018
Coordinator:	Juraj Ždánsky (DCIS)
Co-operators:	Karol Rástočný (Vice Coordinator), Jozef Hrbček, Peter Holečko, Peter Nagy, Vojtech Šimák (DCIS)

KEGA 038ŽU-4/2017: Laboratory education methods of automatic identification and localization using radiofrequency identification technology	
Summary:	Automatic identification systems currently represent an irreplaceable role in the automation of industrial production, transport, logistics and trade. Among the technical means allowing automatic identification of persons, objects or animals a radio frequency identification (RFID) dominates. Taking the importance of this technology into account it is necessary that graduates of the study field "Automation" and "Telecommunication and Radio Communication Engineering" that are accredited on the Faculty of Electrical Engineering, University of Žilina, have gained deep knowledge of the principles and applications of this modern technology. The presented project sets a number of scientific and pedagogical objectives. In the scientific objectives the mathematical modelling of RFID systems and their data channels, and also the development of digital signal processing algorithms in the field of RFID are dominant. The dominant educational objectives are the

	building of several laboratory workplaces enabling to demonstrate the basic physical principles of identification and localization of the RFID tags and to demonstrate the data structures of most commonly used identification cards such as Mifare and Desfire.
Realization:	01/2017 – 12/2019
Coordinator:	Peter Vestenický (DCIS)
Co-operators:	Jozef Balák, Michal Gregor, Peter Kello, Peter Nagy, Dušan Nemec, Juraj Ždánsky (DCIS)

KEGA 071ŽU-4/2017: Key Competences Formation and Effective Support of Students Mobility at Technology Faculties: Modelling, Design and Assessment of Flexible Education Concept	
Summary:	The project is aimed at effective flexible digital educational environment for technical and technological education at technical faculties concentrated on the support of development of key competencies of graduates of technical faculties by means of massive technological support directed at synergy of components of knowledge base and its integration with competences of graduates of technical study fields in an actual working environment. To the main aims of the project is related the setting up of educational environment, the integration of the content of education and the support of effective transfer of knowledge into the actual environment of „the European working market“. The solution of the project is directed at the main component of the educational process – the content of education and its compatibility with the technological trends in the actual working environment where digitization of the content of education and flexibility of design of educational modules with multimedia components is dominant and is compatible with the trends of flexible educational environment (eContent, eLearning, eMobile, Blended Learning, Connected Learning). The project responds to the outputs of the National Project "Universities as engines of development of the knowledge society" in the context of massive amount of active researchers who work and use knowledge and technology base for this project. The main contribution is the conceptual solution of flexible education, i.e. the proposal, the design and the verification of the open „online“ educational modules to support the development of key competences of students in the specific field of technical science. The project will contribute to diversification of university education, mobility of graduates of technical universities that will contribute to increase of educational efficiency and will encourage arrival of foreign investment to Slovakia and, mainly, will help Slovak firms to succeed at world market by strengthening of the dominant subject which produces values – the technical field graduate with the key competences for the 21st century needs.
Realization:	01/2017 – 12/2019
Coordinator:	Pavel Pavlásek (DME)
Co-operators:	Anna Simonová, Pavol Špánik, Dušan Koniar, Libor Hargaš, Zuzana Loncová, Tomáš Uriča (DME)

KEGA 073ŽU-4/2017: Implementation of modern education tools for automotive electronics and electromobility education	
Summary:	This project is focused on utilization of modern research and educational methods for improvement of new study programme Automotive electronics at the University of Zilina. Since the study programme Autotronics emerged from

	discussion between experts from the academic and scientific sector and from industry sector, this project is focused on combination of modern technologies in practise and teaching process. In our department (mechatronics and electronics) we see the trend of increasing requirements for number of graduates of first and second degree with knowledge involving not only the area of mechatronics and electronics but also automotive electronics. In addition, the cooperating companies in automotive industry require students with knowledge of the car (either with internal combustion engine ICE and electric cars) in a broader context and deeper understanding. It is clear, that the new study programme Autotronics must include the most modern technical means not only at the hardware level (real vehicle systems of ICE and EV), but also at the software level (freely programmable ECUs, embedded processor systems). The educational process will be used by means of e-learning, online lab and multimedia access. Students will be using modern tools of learning, will acquire the knowledge needed for success in practice or in the higher levels of study. The project builds on previously successfully investigated projects at the Department of mechatronics and electronics. Main focus is to complete laboratory of Autotronics and electromobility with comprehensive applications and samples of automotive electronic and control systems for cars with internal combustion engine and electric cars. Another objective includes the release of two university textbooks focused on automotive electronic systems and control systems for automotive and industrial applications. Finally, a new educational website with course materials, practical guides and tutorials will be created. The educational portal will be designed not only for students of study programme Autotronics, but also for all students of the Electrical engineering.
Realization:	01/2017 – 12/2019
Coordinator:	Pavol Špánik (DME)
Co-operators:	Peter Drgoňa, Pavel Pavlásek, Michal Frivaldský, Anna Kondelová, Ondrej Hock, Slavomír Kaščák, Jozef Lakatoš, Marek Paškala, Roman Koňarik (DME)

Structural Funds

ITMS 313011B765: Universal virtual intelligent space for transport systems	
Summary:	The research objective is in creating a system environment of information sources based on IoE, its advanced processing, connection to other life areas, searching for correlations between things, processes (information), seemingly unrelated, using these discovered dependencies in technological innovations, decision making and process control in transport and in standard living of citizens.
Realization:	09/2017 – 08/2022 , Project is currently under hold
Coordinator / Project manager (UNIZA):	Rastislav Pirník (DCIS)
Co-operators:	Aleš Janota, Juraj Spalek, Mária Franeková, Pavel Přibyl, Peter Vestenický, Marian Hruboš, Peter Holečko, Emília Bubeníková, Vojtech Šimák, Jozef Hrbček, Michal Gregor, Alžbeta Kanáliková, Dušan Nemec (DCIS)

ITMS2014+313011B738: Research and development of wireless system for prediction of potential savings of heating energy in large buildings	
Summary:	The project is focussed on research and development of wireless monitoring system WHEMS (Wireless Heating Efficiency Monitoring System), which will

	consist of wireless agents for monitoring of physical parameters (provided heat, interior and exterior temperatures, humidity, etc.) at the room level and master ICT architecture for archiving and processing of data for prediction of potential reduction of heating energy costs in large buildings possible by use of optimal regulatory system. Successful development of the system will enable new services in area of energetics, which will enable development of optimal regulation system for a given building and estimation of investment return. Side effect of this service will be reduction of heating costs and protection of the environment. Activities of the project involve research and development of wireless agents and infrastructure from both hardware and software point of view, development of software for ICT infrastructure, as well as basic research of algorithms for estimation of energy savings. The system is assumed to be deployed in buildings of government, schools, hospitals and administrative buildings. Implementation of the project will be based on close cooperation of teams from University of Zilina and from Amicus SK company, this will enable improvement of regional cooperation of both institution with focus on new experiences in area if construction, development and operation of wireless agents and ICT infrastructure in areas of heating and cooling regulations.
Realization:	09/2017 – 02/2023, Project is currently under hold
Coordinator:	Martin Vestenický (DMICT)
Co-operators:	Peter Vestenický, Adamec Bohumil, Kuba Michal, Kortiš Peter, Vaculík Martin (DMICT)

Other National Research Projects

IBM-10/2016: Exploration of Smart City Services with IBM within UNIZA Campus	
Summary:	The aim of the project is to follow up the IOT activities within UNIZA Campus, bring new solutions & innovations and help more students to get familiar with IBM technology in this area (IOT, BigData, Analysis). It will also deepen the relation between IBM and UNIZA.
Realization:	10/2016 – 10/2018
Coordinator:	Peter Holečko (DCIS)
Co-operators:	Aleš Janota, Juraj Spalek (DCIS)

2016et017: Control of frequency management of the 5G communication network	
Summary:	Applied scientific research was focused on the partial tasks of modelling of multiplex switching into suitable free frequency channels, optimizing the efficiency of use of future 5G bandwidth, analysing manners of coding and modulation for real environments, selecting optimal advanced signal modulations, data protection and system reliability. In order to fulfil the technical objectives, a theoretical design was created due to the financial resources of the project, the initial technical realization of the basic set of hardware components and control software algorithms for the radio direction of the communication node.
Realization:	12/2016 – 11/2017
Coordinator:	Gabriel Cibira (IAS)
Co-operators:	Libor Ladányi, Ľubomír Scholtz, Michaela Solanská (IAS) Students: Marek Oravec, Tomáš Praskaj, Erik Sádovský, Michael Hruška, Michal Salák, Peter Púchovský

314/17_RT: Universal balancing system for traction batteries of electric vehicles	
Summary:	Creation of a universal balancer of traction lithium batteries of all types is a project goal. The balancer system includes an active-passive balancer with intelligent control system that ensures increased cyclability and safety of different battery types.
Realization:	09/2017 – 04/2018
Coordinator:	Peter Drgoňa (DME)
Co-operators:	Matúš Danko, Juraj Adamec, Michal Taraba (DME)

Other National Non-research Projects

HOOP – a playful form of OOP education for middle school teachers	
Summary:	The project focuses on a change of the Informatics course curricula at the secondary schools and a preparation of informatics teachers for OOP education, specifically in JAVA and Greenfood and BlueJ environments.
Realization:	09/2016 – 09/2018
Coordinator:	Michal Varga, Faculty of Management Science and Informatics UNIZA
Co-operators:	Alžbeta Kanáliková (DCIS), Emil Kršák, Michal Varga, Norbert Adamko, Ľubomír Sadloň (Faculty of Management Science and Informatics)

POPULAS 2	
Summary:	The POPULAS 2 project is aimed on popularisation of research and development in area of information and communication technologies by presentation activities for audience consisting of students and lecturers of regional schools focussed on informatics, electronics and transport. During the project seminar for secondary school lecturers, which will enable exchange of experiences and discussion in area of ICT, and teaching of young persons.
Realization:	01/2017 – 07/2017
Coordinator:	Róbert Hudec (DMICT)
Co-operators:	Vladimír Matyščák, Miroslav Benčo, Ján Hlubík, Peter Sýkora, Juraj Machaj, Jozef Dubovan, Patrik Kamencay, Peter Počta (DMICT)

Phenomenology and Outreach (FEPO), Agreement between Ministry of Education SR and University of Žilina	
Summary:	Department of Physics will collaborate with CERN in the area of research and outreach in particle physics. In the research part we will collaborate with the Theory Department in the area of Heavy Ion Physics and mechanism of Electroweak Symmetry Breaking. Our department will coordinate Particle Physics Masterclasses at the national level (Masterclasses, http://fyzika.uniza.sk/mc/) at 6 Slovak universities, will co-organize international competition Beamline for Schools and develop portal svetcastic.sk for outreach and communication of particle physics.
Realization:	01/2017 – 12/2020
Coordinator:	Ivan Melo (DPh)
Co-perators:	Mikuláš Gintner, Gabriela Tarjányiová, Jozef Kúdelčík (DPh)

K4 Žilina Childrens University 2017	
Summary:	Goal of the project is to focus the attention of school age children from Žilina area on STEM subjects and show them applications of research for everyday

	life.
Realization:	02/2017 – 11/2017
Coordinator:	Peter Hockicko (DPh)
Co-operators:	Teachers from UNIZA

Contract-based research activities for 2017

Valid from	Number of contract	Customer	Coordinator	Title
6/17	S-103-0004/17	Altpro,d.o.o. Zagreb, Hrvatska	Karol Rástočný	Assessment of the security of the system RLC 23
8/17	S-103-0007/17	ON Semiconductor Piešťany	Michal Frívaldský	Application and product support
10/16	S-103-0008/17	První SaZ Pilsen	Karol Rástočný	Assessment of the safety of the PZZ-K type crossing device
09/17	S-103-0009/17	SiuTec, s.r.o. Žilina	Michal Frivaldský	Analysis of the implementation of electronic subsystems of the suit
11/17	S-103-0010/17	VÚTCH-Chemitex s.r.o. Žilina	Ladislav Janoušek	Preparation and manufacture of electrically conductive yarns and textiles
11/17	S-103-0011/17	Mesto Žilina	Michal Frivaldský	Action plan of low carbon mobility in Žilina
12/17	S-103-0012/17	BEZ Transformátory, a.s. Bratislava	Vladimír Vavruš	Hobble transformer coil
12/17	S-103-0013/17	Fyzikálny ústav AV CZ, Prague	Dušan Pudiš	Laser interference lithography
10/16	S-103-0014/17	SE- Distribúcia,a.s. Žilina	Juraj Altus	Optimizing losses in the distribution system

Contract-based non-research activities for 2017

Valid from	Number of contract	Customer	Coordinator	Title
05/17	P-103-0002/17	EVPÚ N.Dubnica	Martin Brandt	Cooler sample watering
6/17	P-103-0003/14	ELBEK Príbovce	Miroslav Gutten	Transformer Moisture Analyzes
09/17	P-103-0005/17		Ladislav Janoušek	Grants Week conference
6/17	P-103-0006/17	KraussMaffei Technologies Sučany	Pavol Makýš	Training of electric drives

Submitted Proposals of International Research Projects in 2017

Type / call	**Name of the project**	**Outcome of evaluation**
H2020/ WIDESPREAD-05-2017	Low Energy Machine Learning for Industry 4.0 Applications (LeMa4.0), CSA Coordination and support	under evaluation

	action (Aleš Janota, Michal Gregor)	
H2020 / WIDESPREAD – Twinning	From sensors to data analytics: Embedding energy-efficiency and wellbeing into intelligent buildings and transport (INBUILT)	under evaluation
H2020 / WIDESPREAD - Twinning	LEMA4.0	under evaluation
Tweening	INBUILT	under evaluation
Bilateral Call Slovakia-France	New optical sensors based on mode interference in special optical fibers	under evaluation
Federal Ministry of Education and Research, Germany	Internationale Zusammenarbeit in Bildung und Forschung, Region Mittelost- und Südosteuropa (MOEL-SOEL-Bekanntmachung)	under evaluation

Research for Practice; the Most Important Realized Outputs

DME:

Project number: APVV–0433–12

Name of the project: Research and Development of Intelligent System for Wireless Energy Transfer in Electromobility Application

Coordinator: Pavol Špánik

Summary / Achievement:

A physical model of the WET system with a resonant bond was constructed within the project solution. Measured operating parameters of the model are: input voltage 400Vdc, power output 3300W, working distance between coils 10-20cm, main resonant frequency 295 kHz (working band 300 kHz - approx. 400 kHz). The WET design process has been modified in accordance with the TIR J2954 standard. The impact of the WET system on technical and biological objects was analyzed. Also, a large SW library was created both in the research and in the pedagogical process usable. The acquired knowledge will be applied in the construction of a WET system prototype, which will be used in the electric vehicle charging station realized in cooperation with the industrial partner.

Project number: APVV–0314–12

Name of the project: Research and Development of New Generation of Power Supplies Based on Converters with High Power Density, High Efficiency, Low EMI and Circular Energy

Coordinator: Branislav Dobrucký

Summary / Achievement:

From the point of view of the quality indicators priorities, a double semi-bridge DC / AC / DC converter integrated with the DC output module was chosen as output of the project. The converter has excellent efficiency (98% at switching frequency 100 kHz and ZVS switching) and zero circulating energy. As a switched power supply, it meets all required parameters according to EN, but its modulus power density does not reach the target parameters. The second developed and tested type was the multi-resonant LCL2C2 converter, which generates nearly harmonic output AC voltage with less than 5% distortion and minimized deformation power (also <5%). Such a resonant LCLC converter with direct AC output is suitable for hardening and demagnetizing of materials with frequencies ranging from 400 Hz to 40 kHz.

IAS LM:
Project number: VEGA 1/0676/17
Name of the project: Research of electrical and optical properties of nanostructured semiconductor interfaces
Coordinator: Stanislav Jurečka
Summary / Achievement:
[1] Developed new method of analysis of microstructure semiconductor systems based on TEM experiment analysis by multifractal algorithms.
[2] Developed new method of analysis of porosity thin oxide porosity analysis based on the theoretical modelling of the optical experiment.
[3] Developed new method of analysis of nanoparticle size based on the theoretical modelling of Raman scattering.

DEBE:
Project number: S-103-0010/17
Name of the project: Realization of intelligent textiles and evaluation of their properties
Coordinator: Ladislav Janoušek
Summary / Achievement: Evaluation of electrical parameters of conductive yarn; implementation of conductive yarns into textiles; evaluation of electric properties of textiles with implemented conductive yarns; proposal and evaluation of connectivity of active textile elements with external electronic circuits.

Conferences and seminars

The Faculty of Electrical Engineering organized, or participated in preparation of the following scientific events in 2017:

- Co-organization: Progress in Applied Surface, Interface and Thin Film Science 2017, International Conference, 22nd – 23rd November 2017, Florence, the main organizer: Institute of Physics, Slovak Academy of Sciences, Bratislava, Emil Pinčík;
- Alternative Energy Resources ALER 2017, scientific-expert conference, 4th – 6th October 2017, Bobrovec, the main organizer: IAS, Zdeněk Dostál;
- Co-organization: 23rd International Conference on Applied Physics of Condensed Matter APCOM, 12th – 14th June 2017, Štrbské Pleso, the main organizer: Institute of Nuclear and Physical Engineering, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology in Bratislava, Ján Vajda;
- Student scientific competition (ŠVOS), FEE UNIZA, May/April 2017, the main organizer: Peter Hockicko (Vice-dean);
- Seminar on Silicon and Organic Electronics, IAS, 11th July 2017 (within the SENSIBLE project), the main organizer: Jarmila Müllerová (IAS);
- Students Research Competition of IAS EF UNIZA, 5th April 2017, Liptovský Mikuláš, the organizer: Zdeněk Dostál (IAS);
- ADEPT 2017 – International conference Advances in Electronic and Photonic Technologies, organizer: Physics Department, chair of the organizing committee: Dušan Pudiš, members: Ivana Lettrichová, Ľuboš Šušlik (DPh);
- PTEE – Physics teaching in Engineering Education, 18th – 19th May 2017, Žilina, chair of the organizing committee: Peter Hockicko, member: Štefan Hardoň (DPh);
- Organizing a workshop on the theme "Energy for the Future: Energy 4.0", which was part of the European Week of Regions and Cities in Brussels. Expert co-guarantors: VŠB-TU Ostrava and Silesian

University of Technology Gliwice. The patronage over the event was taken by member of the European Parliament - Ivan Štefanec;

- International conference DEZ, 19th -20th September 2017, Papradno – Považská Bystrica, Slovakia, coordinator: Martin Brandt (DMAEE);
- Competition: Technical idea of the year, 23rd March 2017, Jozef Šedo, Ondrej Hock (DME);
- Obtaining the certificate CLAD (Certified LabVIEW Associate Developer), 1st August 2017, National Instruments, Libor Hargaš (DME);
- Establishment of the LabVIEW Academy, 1st November 2017, FEE UNIZA, National Instruments, Libor Hargaš, Dušan Koniar (DME);
- RTT 2017, 12th – 14th September 2017, Vrátna, Róbert Hudec (DMICT);
- „Current information on the education area at technical universities “, seminar co-organised with the Association for employment of women in science and technology in Slovakia, 25th October 2017, Žilina, guarantee: Aleš Janota (DCIS);
- Road tunnels technological equipment: project – realisation – operation – maintenance. 4th April 2017, AB 117, organiser: Juraj Spalek (DCIS);
- Tunnel simulator at UNIZA – properties and usage, 6th September 2017, AB 205, organiser: Juraj Spalek (DCIS).

Publication activities

The permanent task of the Faculty is to increase the publication activity in quality journals which are indexed in international professional databases.

Tab.11: Publication activities at the FEE (based on registration at the University Library up to February/March of the relevant year)

Year	Monographs and university textbooks	Scientific works in journals	Scientific publications in Conference pub.	Patents, Utility Models	Others (Scripts, etc.)
2008	8	126 (8*)	196	0	69
2009	4	89 (11*)	231	1	29
2010	4	76(12*)	246	3	49
2011	4	86 (13*)	219	2	70
2012	4	76 (12*)	223	8	65
2013	12	107 (18*, 36**)	198	1	94
2014	5	89 (24*, 23**)	257	7	28
2015	10	84 (16*, 45**)	209	3	25
2016	4	61 (24*, 27**)	243	12	36
2017	6	98 (52*, 24**)	175	8	52

* out of which indexed in Current Contents Connect database
** out of which indexed in SCOPUS or Thomson Scientific Master Journal

In the following Tab. 12 we present in detail the publishing activities of the Faculty in 2017 (based on registration at the University Library up to January 30, 2018)

Category	Category name	Number
AAA	Scientific monographs published in foreign publishers	1
AAB	Scientific monographs published in domestic publishers	1
ACB	University textbooks published in domestic publishers	4
ADC	Scientific papers in foreign journals	52
ADE	Scientific papers in other foreign journals	14
ADF	Scientific papers in other domestic journals	8
ADM	Scientific papers in foreign journals registered in the Web of Science or SCOPUS databases	17
ADN	Scientific papers in domestic journals registered in the Web of Science or SCOPUS databases	7
AEC	Scientific papers in foreign reviewed scientific proceedings, monographs	2
AED	Scientific work in domestic reviewed scientific proceedings, monographs	5
AGJ	Applications of patents, utility models, …	8
AFB	Published invited papers at domestic scientific conferences	3
AFC	Published papers at foreign scientific conferences	72
AFD	Published papers at domestic scientific conferences	79
AFG	Abstracts of contributions from foreign conferences	9
AFH	Abstracts of papers from domestic conferences	5
BAB	Professional book works published in domestic publishers	1
BCI	Scripts and textbooks	4
BDE	Professional papers in non-currented foreign journals	2
BDF	Professional papers in non-currented domestic journals	5
BEE	Professional works in unrecognized foreign proceedings (conference and non-conference)	5
BEF	Professional work in unrecognized domestic proceedings (both conference and non-conference)	4
FAI	Editorial and compilation work	3
DAI	Dissertation and habilitation works	27
GII	Various publications and documents that cannot be classified in any of the previous categories	2

Monographs (Chapters in monographs)

[1] DOBRUCKÝ, Branislav - LAŠKODY, Tomáš - KOŇARIK, Roman: Two-Phase Inverters with Minimum Switching Devices. In: Recent Developments on Power Inverters, INTECH, 2017, ISBN 978-953-51-3232-5, 28 pp.

[2] HOCK, Ondrej - ŠEDO, Jozef: Forward and Inverse Kinematics Using Pseudoinverse and Transposition Method for Robotic Arm DOBOT. In: Kinematics, INTECH, 2017, ISBN 978-953-51-3688-0, ISBNp 978-953-51-3687-3, p. 75-94.

[3] SCHWARTZ, Ladislav - ČEPČIANSKY, Gustáv - RADOŠ, Ivan: Structural reliability of communication networks: scientific monograph - Saarbrücken: LAP LAMBERT Academic Publishing, 2016, ISBN 978-3-659-88815-1, 232 pp.

[4] FRANEKOVÁ, Mária – RÁSTOČNÝ, Karol: Kryptografia v bezpečnostne relevantných systémoch, Žilina: EDIS, 2017, ISBN 978-80-554-1310-5, 203 s.

Books, Textbooks and Lecture Notes

[1] HRABOVCOVÁ, Valéria - RAFAJDUS, Pavol - MAKYŠ, Pavol: Analýza elektrických strojov, EDIS – vydavateľstvo Žilinskej univerzity, 2017, ISBN 978-80-554-1323-5, 225 s.

[2] KANÁLIKOVÁ, Alžbeta – BANDURIČ, Igor: Modelovanie pomocou nástroja Enterprise Architect, EKONÓM, 2017, ISBN 978-80-225-4340-8, 134 s.

[3] GREGOR, Michal – NEMEC, Dušan – HRUBOŠ, Marián – SPALEK, Juraj: Umelá inteligencia 2, CEIT a.s., 2017, ISBN 978-80-89865-03-1, 302 s.

[4] GREGOR, Michal – HRUBOŠ, Marián – NEMEC, Dušan: Umelá inteligencia I: Návody na vybrané cvičenia, CEIT a.s., 2017, ISBN 978-80-89865-02-4, 153 pp.

[5] HRBČEK, Jozef – ŠIMÁK, Vojtech – HRUBOŠ, Marián: Riadenie motorov použitím systému B&R, Žilina: EDIS, 2017, ISBN 978-80-554-1327-3, 166 s.

[6] HOTTMAR, Vladimír: Ako to vidím ja. Odborná knižná publikácia, ISBN 978-80-554-1324-2, EDIS vydavateľské centrum UNIZA

[7] FAKTOROVÁ, Dagmar: Pasívne mikrovlnné prvky, EDIS - Žilinská univerzita, 2017, ISBN 978-80-554-1390-7, 104 s.

[8] HOCKICKO, Peter – NĚMEC, Miroslav: Problémové fyzikálne úlohy pre videoanalýzu reálnych dejov [elektronický zdroj] - 1. vyd. - Žilina: Žilinská univerzita, 2017. - CD-ROM, ISBN 978-80-554-1404-1, 155 s.

Current Content Journals

[1] HRABOVCOVÁ, Valéria - RAFAJDUS, Pavol - MAKYŠ, Pavol - ŠEBEST, Martin: Improved barriers rotor of the reluctance synchronous motor, In: Electrical engineering, Vol. 99, No. 4, 2017, ISSN 0948-7921, p. 1325-1335.

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Patents, Utility Models, Designs, Trade Marks

Submitted in 2017:

[1] Category: patent
Application number: PP 43-2017
Date of publication of the application: 15th May 2017
Authors: Vladimír Hottmar, Bohumil Adamec
Title: Network segment for optimal setting of QoS tools in converged paclket networks
Granted by the office: industrial property office of the Slovak republic

[2] Category: patent
Application number: PP 36-2017
Date of publication of the application: 20th February 2017
Authors: Vladimír Hottmar, Bohumil Adamec
Title: Connection of adaptive demodulator for signals with amplitude modulation
Granted by the office: industrial property office of the Slovak republic

[3] Category: patent
Application number: PP 98-2017
Date of publication of the application: 29th September 2017
Available to the public: 29th September 2017
Authors: Michal Gála, Branko Babušiak, Ladislav Janoušek, Štefan Borik, Róbert Hudec, Martin Paralič, Slavomír Matúška, Ľudmila Balogová, Jozef Šesták, Kamila Huljaková
Title: Intelligent clothing for monitoring of human bio data, mainly electrocardiogram signals
Granted by the office: industrial property office of the Slovak republic

[4] Category: utility model
Application number: PUV 208-2017
Date of publication of the application: 29th September 2017
Available to the public: 29th September 2017
Authors: Michal Gála, Branko Babušiak, Ladislav Janoušek, Štefan Borik, Róbert Hudec, Martin Paralič, Slavomír Matúška, Ľudmila Balogová, Jozef Šesták, Kamila Huljaková
Title: Intelligent clothing for biosignals monitoring, in particular an electrocardiogram signal
Granted by the office: Industrial Property Office of the Slovak Republic

[5] Category: Industrial design
Application number: 65-2017
Date of publication of the application: 05.02.2018
Authors: Michal Praženica, Branislav Dobrucký, Slavomír Kaščák, Peter Drgoňa
Title: Two-stage power semiconductor system with multi-resonant and matrix converter

[6] Category: Industrial design
Application number: 66-2017
Authors: Michal Praženica, Branislav Dobrucký, Slavomír Kaščák, Peter Drgoňa
Title: Two-stage converter with a half bridge matrix converter and low-frequency output

[7] Category: Industrial design
Application number: 72-2017
Authors: Michal Praženica, Branislav Dobrucký, Slavomír Kaščák, Peter Drgoňa
Title: Single-phase bridge pulse cycloconverter with a reduced number of semiconductor elements

[8] Category: Industrial design
Application number: 155-2017
Authors: Michal Praženica, Michal Prídala, Michal Frivaldský
Title: Double LCCT converter with VF TR and DC output

[9] Category: Industrial design
Application number: 156-2017
Authors: Michal Praženica, Slavomír Kaščák, Branislav Dobrucký
Title: Dual multi-resonant converter with symmetrical output

[10] Category: Industrial design
Application number: 157-2017
Authors: Michal Praženica, Slavomír Kaščák, Michal Frivaldský, Jozef Šedo
Title: Dual serial-parallel resonant (LLC) converter utilising full voltage of a source

[11] Category: Industrial design
Application number: 158-2017
Authors: Michal Praženica, Slavomír Kaščák, Michal Frivaldský, Jozef Šedo
Title: Series-parallel resonant (LLC) converter with dual resonance capacitor

[12] Category: Industrial design
Application number: 186-2017
Authors: Michal Praženica, Michal Frivaldský, Miroslav Pavelek, Branislav Hanko
Title: Interlaced step-up converter with a high gain, bound inductance and magnetic flux reset

[13] Category: Industrial design
Application number: 180-2017
Authors: Michal Praženica, Branislav Dobrucký, Slavomír Kaščák, Roman Koňarik
Title: Connection of a two-phase electric motor supplied by constant frequency from single-stranded matrix converter from industrial networks

[14] Category: Industrial design
Application number: 188-2017
Authors: Michal Praženica, Branislav Dobrucký, Slavomír Kaščák, Roman Koňarik,
Title: Connection of a two-phase electric motor supplied by variable frequency from single-stranded matrix converter from industrial networks

[15] Category: Industrial design
Application number: 187-2017
Authors: Michal Praženica, Branislav Dobrucký, Slavomír Kaščák, Roman Koňarik
Title: Connection of a two-phase electric motor supplied from single-stranded matrix converter with switched capacitor from industrial networks

[16] Category: Industrial design
Application number: 159-2017
Authors: Marek Píri, Michal Frivaldský, Peter Drgoňa
Title: Device for testing the topologies of power semiconductor converters

Specific Realization Outputs

Output type: Method of solution to AC / AC transmission for HEV
Output description: Within the project VEGA 1/0928/15, Research of electronic control of power transmission and motion of road ICE- hybrid HEV and EV vehicles, this was an AC / AC transmission of HEV with the MxC central direct converter and with power transmission via motor-wheels, which are associated with vehicle movement control: electronic directional control via an electronic differential, and with the possibility of an independent steering wheel-motor from one converter.
The new type compared to the front-end VSI type is characterized by smaller losses, thus even better efficiency in the nominal performance of the vehicle, which is essential. Moreover, since the phase currents are smaller, thermal stress is also reduced (about one third). The total number of passive components and their use is also a bit better, while the absence of a bulky smoothing capacitor is important. Comparison of a 5-phase motor with a 3-phase brings less torque ripple, less noise, a slightly better efficiency, and especially in the case of failure of one phase it can continue to work with 80% performance. The possibility of independent control of two motors from one inverter (thanks to the permutation of the motor phases) is its main advantage.

Output type: 5 pieces of intelligent T-shirts - variant A
Output description: Prototypes of intelligent T-shirts prepared by a standard sewing technology of functional elements, sewed conductive paths and with decentralized electronics, processed in sizes M and L in the scope of preparation of the first series of intelligent clothing prototypes.

Output type: 5 pieces of intelligent T-shirts - variant B
Output description: Prototypes of intelligent T-shirts prepared by direct sewing of functional elements and sewed conductive paths with decentralized electronics, processed in sizes M and L in the scope of preparation of the first series of intelligent clothing prototypes.

Habilitations and Inaugurations

Tab. 13: Number of habitations and inaugurations within last eight years

Year	Habilitation		Inauguration	
	Internal	External	Internal	External
2008	2	5		3
2009			1	1
2010			2	
2011	3		2	
2012	5			
2013	2			1
2014	6	1	3	
2015			2	
2016	2		1	
2017	1		1	

FOREIGN ACTIVITIES

Foreign activities at the FEE in 2017 include realization of international projects summarized in the previous section, active participation in foreign scientific and technical forums, and mutual mobility of teachers, researchers and students at foreign institutions.

Dean's office gets information from various agencies and institutions about offered study stays, government scholarships, summer schools, excursions, work offers, foundations and so on. The information is effectively disseminated using modern communication means to the faculty staff as well as to the students.

Programmes supporting educational activities

Program ERASMUS+

Within the frame of Erasmus+ programme 52 bilateral agreements were approved for students / teachers / other staff exchanges for the academic year 2016/2017, as follows:

1. TU Wien (AT)
2. Todor Kableshkov Higher School of Transport (BG)
3. College of Telecommunications and Post (BG)
4. University of Hradec Králové (CZ)

5. University of West Bohemia (CZ)
6. Czech Technical University in Prague (CZ)
7. VŠB-Technical University in Ostrava (CZ)
8. Technical University of Liberec (CZ)
9. Brno University of Technology (CZ)
10. Silesian University in Opava (CZ)
11. RWTH Aachen (DE)
12. TU Dresden (DE)
13. Hochschule für Technik und Wirtschaft Dresden (DE)
14. Hochschule fuer Telekommunikation Leipzig (DE)
15. RUHR Bochum (DE)
16. University of Applied Sciences Aschaffenburg (DE)
17. Universitat Autonoma de Barcelona (ES)
18. Tampere University of Technology (FIN)
19. University of Jyväskylä (FIN)
20. Aalto University (FIN)
21. University of Vaasa (FIN)
22. Lappeenranta University of Technology (FIN)
23. Télécom SudParis (FR)
24. Télécom Ecole de Management (FR)
25. Université de Picardie “JulesVerne“ (FR)
26. Université de Technologie de Compiègne (FR)
27. Polytech Orléans (FR)
28. Lille 1 University Science and Technology, Polytech Lille (FR)
29. Ecole d'ingénieurs ECE Paris (FR)
30. University of Patras (GR)
31. University of Zagreb (HR)
32. Budapest University of Technology and Economics (HU)
33. University of Catania (IT)
34. Transport and Telecommunication Institute (LV)
35. Kaunas University of Technology (LT)
36. Universidade da Beira Interior (PT)
37. Universidade de Lisboa (PT)
38. Universidade do Porto (PT)
39. Kazimierz Pulaski University of Technology and Humanities in Radom (PL)
40. Lublin University of Technology (PL)
41. Silesian University of Technology (PL)
42. West Pomeranian University of Technology (PL)
43. Gdansk University of Technology (PL)
44. Uniwersitet Technologiczno Przyrodniczy w Bydgoszczy (PL)
45. Transilvania University of Brasov (RO)
46. Universitatea Technica din Cluj-Napoca (RO)
47. Universitatea “POLITEHNICA” din Bucuresti (RO)
48. University of Maribor (SI)
49. University of Strathclyde (UK)
50. Uludağ University (TR)
51. Istanbul Arel University (TR)
52. Karabuk University (TR)

Erasmus+ stays

In the academic year 2016/2017 20 students (thence 4 students for Erasmus+ practical placement), 24 teachers and 1 administrative staff participated in the Erasmus+ programme. The Faculty accepted 25 students and 13 teachers from partner universities.

Other scholarship programmes

The Faculty accepted in the academic year 2016/2017 one student from the Moscow Technological University, the Russian Federation, for 1,37 months mobility within the IAESTE Exchange programme.

Other activities

The Faculty of Electrical Engineering cooperates in the frame of bilateral agreements with the following institutions:

- Ryazan State Radio Engineering University (RU),
- University of Catania (IT),
- University of Zagreb, Faculty of Transport and Traffic Sciences (HR),
- Czech Technical University in Prague (CZ),
- University of Pardubice (CZ),
- ELTODO dopravní systémy s.r.o. Prague (CZ),
- ELTODO EG, a.s., Prague (CZ),
- Railway Research Institute, j.s.c., Prague (CZ),
- VÚKV, a.s., Prague (CZ),
- Technický a zkušební ústav stavební Prague, s.p. (CZ).

Purpose of these agreements is to enhance academic exchange and co-operation in the field of education and research. The co-operation programme involves especially the following activities:

- exchange of students,
- exchange of faculty members and staff,
- exchange of scientific materials, publications and information,
- joint research and research meetings,
- cooperation within the Doctoral study (mainly with University of Catania (IT)).

In addition, the FEE cooperates with many other international institutions, in particular:

- University of Strathclyde, Glasgow (UK),
- National Research Council, Ottawa (CA),
- Technische Universitaet Ilmenau, Faculty of Computer Science and Automation (DE),
- Moscow Technical University of Communications and Informatics (RU),
- Moscow Power Engineering Institute (RU),
- Budapest University of Technology and Economics (HU),
- Tokyo University, Tokio (JP),
- Tohoku University, Sendai (JP),
- Silesian University of Technology (PL),
- Lublin University of Technology, Faculty of Electrical Engineering and Informatics (PL).

A detailed list of institutions is presented in the annual reports of departments.

Foreign stays, visits and conferences

Employees and doctoral students of the Faculty performed in 2017 several short or long stays in foreign countries at partner universities or institutions, and on the contrary, the FEE and its departments accepted students and teachers from abroad.

Picture of mobility at the FEE within foreign stays, conferences and visits can be seen in the following table. The data are summarized according to countries and departments.

The table contains also long stays of employees and doctoral students abroad, and long stay visits of foreign participants at the departments of the FEE.

Employees of the FEE published and/or took part in many international conferences, workshops and symposiums. Detailed information about particular names of employees, titles of papers and conferences, activities performed during the study stays and purposes of foreign visits are presented in annual reports of the departments of the FEE for 2017.

Tab. 14: Foreign stays, conferences and visits in 2017

IN/OUT	DPh	DMAEE	DEBE	DME	DPES	DCIS	DMICT	IAS
Australia					0 / 1		0 / 1	
Belgium				2 / 1		0 / 1	0 / 4	
Brazil							1 / 0	
Czech Republic	1 / 8		2 / 4	1 / 9	2 / 8	4 / 4	0 / 7	2 / 0
Finland				0 / 1			0 / 1	
France			0 / 3					
Greece						1 / 1	1 / 0	
Netherlands							0 / 2	
Croatia				0 / 7		1 / 0	0 / 1	
Indonesia			0 / 2					
Ireland							1 / 0	
Canada	0 / 1						1 / 0	
Kazakhstan				0 / 1				
Lithuania							0 / 3	
Hungary	0 / 1			0 / 2				
Germany	0 / 3		0 / 2	0 / 4		1 / 0	0 / 1	
Poland	1 / 0	5 / 6	1 / 1	2 / 11		2 / 2	0 / 1	
Portugal	0 / 1						0 / 3	
Austria								0 / 1
Romania		1 / 0						
Russian Federation	0 / 4			0 / 4		3 / 1	0 / 1	
Serbia							0 / 3	
Spain	0 / 1			0 / 1			1 / 0	
Switzerland	0 / 1							1 / 0
Sweden					0 / 1		0 / 1	
Italy			1 / 0	0 / 4	0 / 3		0 / 3	
Ukraine				1 / 0	0 / 1			
USA				4 / 3				

Great Britain				0 / 2			3 / 1	1 / 0
Total	**2 / 20**	**6 / 6**	**4 / 12**	**10 / 50**	**2 / 14**	**12 / 9**	**8 / 33**	**4 / 1**
Total all	**48 / 144**							

Membership in International Institutions/Committees

Membership of the Department/-s in international organizations	Department	Membership since
Association for transport telematics, Czech Republic	DCIS	2007

Individual membership of employees of international organizations		Function
Stanislav Jurečka	American Nano-Society, USA	Member
Stanislav Jurečka	Czech and Slovak Crystallographic Association, Prague, Czech Republic	Member
Peter Hockicko	SEFI, Brussels, Belgium	Individual member
Ivan Melo	IPPOG (International Particle Physics Outreach Group)	Slovak delegate
Ivan Melo	EPPCN (European Particle Physics Communication Network)	Slovak delegate
Norbert Tarjány	European Physical Society, France	Individual member
Mikuláš Gintner	American Physical Society, USA	Individual member
Peter Bury	National Committee IUPAP	Vice-chair
Matej Goraus	SPIE, secretary SPIE Student Chapter for Slovakia	Member
Dagmar Faktorová	IEEE, USA	Member
Branislav Dobrucký	IEEE IE Society - Senior Member, USA	Senior member
Pavel Pavlásek	Brandon Hall Excellence in Learning Technology Awards, USA	Expert
	Expert of EC H2020 SMEINST, Belgium	Expert
	Member of European Committee expert team for science and research, Belgium	Member of expert team
Pavol Špánik	IEEE IE Society - Senior Member, USA	Senior member
Michal Frivaldsk	IEEE IE Society, USA	Member
	IEEE SMTC 2016 Evaluation Committee – competition, USA	Member
Peter Drgoňa	IEEE IE Society, USA	Member
Libor Hargaš	IEEE IE Society, USA	Member
Dušan Koniar	IEEE IE Society, USA	Member
Slavomír Kaščák	IEEE IE Society, USA	Member
Michal Praženica	IEEE IE Society, USA	Member
Ondrej Hock	IEEE IE Society, USA	Member
Marek Paškala	IEEE IE Society, USA	Member
Martin Galád	IEEE IE Society, USA	Student member
Zuzana Loncová	IEEE IE Society, USA	Student member
Viliam Jaroš	IEEE IE Society, USA	Student member
Pavol Štefanec	IEEE IE Society, USA	Student member
Marek Píri	IEEE IE Society, USA	Student member
Boris Kozáček	IEEE IE Society, USA	Student member
Peter Počta	ETSI TC STQ, France	Member of working group
	Study Group 12 at ITU-T, Switzerland	Member of working group

	COST IC 1303 AAPELE, COST, Belgium	National delegate and member for management committee
	COST IC 1304 ACROSS , COST Belgium	National delegate and member for management committee, responsible for contact with standardization bodies, leader of TF2
Milan Dado	COST Office Brussels	National coordinator of COST programme
	COST Office Brussels	Member of Executive Board until 6/2017
	COST Office Brussels	National delegation in COST Committee of Senior Officials
	IEEE	Senior Member
Peter Brída	COST TU1302 – SaPPART	National delegate and member for management committee
	IGNSS (International Global Navigation Satellite Systems), Australia	Member
	IEEE, Vehicular Technology Society, USA	Member
	ICST (Institute for Computer Sciences, Social Informatics and Telecommunications Engineering), Gent, Belgium	Member
Juraj Machaj	COST CA15104 – IRACON	National delegate and member for management committee
	COST TU1302 – SaPPART	National delegate
	COST TN1302 – BESTPRACT	National delegate
Darina Jarinová	COST IC1407 - ACCREDIT	National delegate and member for management committee
Róbert Hudec	IEEE Signal Processing Society, Piscataway, NJ, USA	Member
Patrik Kamencay	IEEE Signal Processing Society, Piscataway, NJ, USA	Member
Aleš Janota	Polish Academy of Sciences (PAN) – Transportation Committee, Katowice, Poland	Member
	International Institute of Informatics and Systemics, USA	Member
	Association for Computing Machinery (ACM), USA	Member
Rastislav Pirník	Cooperative systems (SDT), Czech Republic	Member of workgroup
Ivo Čáp	Committee of the International Physics Olympiad	Member
	Governing body of the European Union Science Olympiad	Member
Klára Čápová	International COMPUMAG Society, Southampton, United Kingdom	Member
Ladislav Janoušek	Japan Society for Non-destructive Inspection, Tokyo, Japan	Member
	International COMPUMAG Society, Southampton, United	Member

	Kingdom	
Alena Otčenášová	IEEE	Member
Peter Braciník	Program committee HORIZONT 2020 in area of „Bezpečná, čistá a efektívne využívaná energia“, European commission, Belgium	National delegate
	IEEE	Senior Member
Juraj Altus	IEEE	Senior member
	CIRED, Czech Republic	University of Zilina representative
	IAE, Paris, France International energetic agency	Slovak Republic representative
Matěj Pácha	R&D department CZ LOKO, a.s., Česká Třebová, Czech Republic	Senior member
	IEEE - IAS/IES Joint Chapter, Czechoslovakia section	Committee member
	IEEE – Region 8	Membership Development Subcommittee
	IEEE – Czechoslovakia section	Section chair
Pavol Rafajdus	IEEE	Senior member
Valéria Hrabovcová	IEEE	Senior member
Pavol Makyš	IEEE	Member
Vladimír Vavrúš	IEEE	Member
Marek Roch	IEEE	Member
Marek Höger	IEEE	Member
Ján Vittek	IEEE	Member
Juraj Makarovič	IEEE	Member
Martina Látková	IEEE	Member
Michal Reguľa	IEEE	Member

Individual membership of employees in scientific committees of international journals		**Function**
Miroslav Gutten	Devices and Methods of Measurements, ISSN 2220-9506, Belarus	Member of the editorial board
	PAK - Pomiary Automatyka Kontrola / Measurement Automation Monitoring, Poland, ISSN 0032-4140	Member of the editorial board
	International journal for traffic and transport (IJTTE), ISSN 2217-544X, Beograd, Serbia	Member of the editorial board
	Technical Issues, ISSN 2392-3954, Poland	Member of the editorial board
Milan Chupáč	Elektrotechnický magazín Etm, ISBN 9771210542000/01, Czech Republic,	Member of the editorial board
Daniel Korenčiak	Technical Issues, ISSN 2392-3954, Poland	Member of the editorial board
Milan Šimko	International journal for traffic and transport (IJTTE), ISSN 2217-544X , Beograd, Serbia	Member of the editorial board
	Elektrotechnický magazín Etm, ISBN 9771210542000/01, Czech Republic	Member of the editorial board
Branislav Dobrucký	EPE journal, Print ISSN: 0939-8368 Online ISSN: 2376-9319, Brusel, Belgium	Reviewer
	IEEE Transactions on Industrial Electronics, ISSN: 0278-	Reviewer

	0046, USA	
	IEEE Transactions on Power Electronics, ISSN: 0885-8993, USA	Reviewer
Michal Frivaldský	International Journal on Thermal Science, ISSN: 1290-0729, France	Reviewer
	Transactions on Industrial Electronics, ISSN: 0278-0046, USA	Reviewer
	Electronics Science Technology and Application, ISSN: 2424-8460 (Online) 2251-2608 (Print), Singapore	Member of the editorial board
Pavol Špánik	Advances in Electrical and Electronic Engineering, ISSN: 1336-1376 (Print) 1804-3119 (Online), Czech Republic	Member of the editorial board
Peter Počta	AEÜ - International Journal of Electronics and Communications, ISSN 1434-8411, Germany (Elsevier)	Member of editorial board
Ladislav Schwartz	Universal Journal of Communications and Network, ISSN 2331-6748, USA	Editor in chief
	Network and Communication Technologies, ISSN 1927-0658, Canada	Member of editorial board
Peter Brída	Open Engineering, publisher: DE GRUYTER OPEN, ISSN: 2391-5439, Netherland	Editor
Juraj Machaj	Computer Science and Information Technology, HR publishing, USA	Member of editorial board
Patrik Kamencay	IJATES2 - International Journal of Advances in Telecommunications, Electrotechnics, Signals and Systems, Czech republic	Member of editorial board
	Computational Research, HR publishing, USA	Member of editorial board
Róbert Hudec	IJATES2 - International Journal of Advances in Telecommunications, Electrotechnics, Signals and Systems, Czech republic	Member of editorial board
Daša Tichá	Slaboproudý obzor, ISSN 2336-5773, Czech republic	Member of editorial board
Milan Dado	Pomiary, Automatyka, Robotyka PAR	Member of editorial board
	Advances in Electrical and Electronic Engineering	Chairman of Editorial board
Mária Franeková	International scientific journal Archives of Transport System Telematics, ISSN 189-8208, Poland	Member of editorial board
	International scientific Journal of Scientific and Applied research, ISSN 1314-6289, Bulgaria	Member of editorial board
	International scientific journal for electrical engineering Elektrorevue, ISSN 1213-1539, Czech Republic	Member of editorial board
	International scientific journal Advances in Electrical and Electronic Engineering, CZECH REPUBLIC, ISSN 1804-3119	Member of editorial board
Aleš Janota	Archives of Transport System Telematics, ISSN 1899-8208, Poland	Chair of scientific board
	TransNav International Journal on Marine Navigation and Safety of Sea Transportation, ISSN 2083-6473, Poland	Member of programme board
Karol Rástočný	Archives of Transport System Telematics, Polish Association of Transport Telematics, ISSN 1899-8208,	Member of editorial board

	Poland	
	Advances in Electrical and Electronic Engineering, ISSN 1804-3119, Czech Republic	Member of editorial board
	Wspolczesne systemy transportowe, ISSN 2449-7851, Poland	Member of editorial board
Juraj Spalek	Annals of Faculty Engineering Hunedoara – Journal of Engineering, ISSN 1584-2665, ISSN 1584-2673, indexed in Index Copernicus – Journal Master List, Romania	Member of editorial board
	Acta Technica Corviniensis – Bulletin of Engineering, e-ISSN: 2067-3809, Edited by Faculty of Engineering Hunedoara University Politehnica Timisoara, Romania	Member of scientific board
Juraj Ždánsky	Archives of Transport System Telematics, Polish Association of Transport Telematics, ISSN 1899-8208, Poland	Member of programme board
Michal Gregor	Applied Computer Science, ISSN 2353-6977	Member of scientific board
Ivo Čáp	Československý časopis pro fyziku, Academy of Sciences of CR, Prague, Czech Republic, ISSN 0009-0700	Member of editorial board
	ARNICA, University of West Bohemia, Pilsen, Czech Republic, ISSN 1804-8366	Member of editorial board
Klára Čápová	Advances in Electrical and Electronic Engineering, Ostrava, Czech Republic, ISSN 1804-3119	Member of editorial board
Ladislav Janoušek	Elektryka, Silesian University of Technology, Poland, ISSN 1897-8827	Member of scientific committee

Individual membership of employees in the scientific committees of international conferences		**Function**
Jarmila Müllerová	23rd International Conference on Applied Physics of Condensed Matter (APCOM), 12th – 14th June 2017, Štrbské Pleso, Slovakia	Member of the programme committee
Jarmila Müllerová	International Conference on Advances in Electronic and Photonic Technologies (ADEPT 2017), 18th – 21st June 2017, Podbanské, Slovakia	Member of the programme committee
Stanislav Jurečka	International Conference on Progress in Applied Surface, Interface and Thin Film Science (SURFINT-SREN), 20th – 23rd November 2017, Florencia, Italy	Member of the programme committee
Zdeněk Dostál	International Conference on Renewable Energy Sources Potential, Economy, Character and Technology (RESpect 2017), 29th – 31st March 2017, Herľany, Slovakia	Member of the scientific committee
Zdeněk Dostál	38th International Conference on Non-Conventional Energy Resources (38.NZEE), 10th – 12th May 2017, Hustopeče, Czech Republic	Member of the programme committee
Peter Hockicko	MAP 2017	Member of scientific committee
Peter Hockicko	3rd International Conference on Higher Education Advances (HEAd'17), Zurich, Switzerland	Member of program committee
Jozef Kúdelčík	International Conference Physics, Ethics, Technology, Žilina, Slovakia	Member of organizing and scientific committee
Ivan Melo	International Conference Physics, Ethics, Technology, Žilina, Slovakia	Member of scientific committee

Dušan Pudiš	ADEPT 2017, Slovakia	Chair of organizing committee
Miroslav Gutten	International conference NEET 17, Zakopane, Poland	Member of scientific committee
Branislav Dobrucký	TransComp 2017 – THU Radom, Poland	Member of the program committee
	Power Electronics Ee 2017, University of Novi Sad, Serbia	Member of the program committee
	Logitrans, Szcyrk, Poland	Member of the program committee
Peter Počta	International Workshop on Autonomous Control for Performance and Reliability Trade-offs in Internet of Services, L'Aquila, Italy	Program co-chair
	First IFIP/IEEE International Workshop on Quality of Experience Management, Lisbon, Portugal	Member of technical program committee
	Intelligent Transport Systems – From research and development to the market uptake (INTSYS 2017), Helsinki, Finland	Member of technical program committee
	26th International Conference on Information Systems Development, Larnaca, Cyprus	Member of technical program committee
	13th ACM International Symposium on QoS and Security for Wireless and Mobile Networks, Miami Beach, USA	Member of technical program committee
	9th International Conference on Quality of Multimedia Experience, Erfurt, Germany	Member of technical program committee
	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech Republic	Member of technical program committee
Peter Brída	International Conference on Recent Advances on Signal Processing, Telecommunications & Computing (SigTelCom), 2017, Vietnam	Member of technical program committee
	13th International Conference on Artificial Intelligence Applications and Innovations (AIAI 2017), Australia	Member of technical program committee
	13th Advanced International Conference on Telecommunications" (AICT2017), Italy	Member of technical program committee
	Conference on Information and Computer Science (NICS), Vietnam	Member of technical program committee
	40th International Conference on Telecommunications and Signal Processing (TSP), 2017, Spain	Member of technical program committee
	9th International Conference on Advanced Cognitive Technologies and Applications" (COGNITIVE2017), Greece	Member of technical program committee
	9th Asian Conference On Intelligent Information and Database Systems ACIIDS2017, Japan	Member of technical program committee
	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech Republic	Member of technical program committee
	9th International Conference on Computational Collective Intelligence Technologies and Applications, ICCCI 2017, Cyprus	Member of technical program committee

	16th International Conference on Intelligent Software Methodologies, Tools, and Techniques (SOMET_17), Japan	Member of technical program committee
	8th International Conference on Indoor Positioning and Indoor Navigation IPIN 2017, Japan	Member of technical program committee
	FedCSIS the 6th International Conference on Wireless Sensor Networks, Czech Republic	Member of technical program committee
Juraj Machaj	13th Advanced International Conference on Telecommunications“ (AICT2017), Italy	Member of technical program committee
	9th Asian Conference On Intelligent Information and Database Systems ACIIDS2017, Japan	Member of technical program committee
	9th International Conference on Computational Collective Intelligence Technologies and Applications, ICCCI 2017, Cyprus	Member of technical program committee
	3rd International Conference on Cloud Computing Technologies and Application, CloudTech'17, Morocco	Member of technical program committee
	8th International Conference on Information and Communication Systems, ICICS2017, Jordan	Member of technical program committee
	40th International Conference on Telecommunications and Signal Processing (TSP), 2017, Spain	Member of technical program committee
Patrik Kamencay	40th International Conference on Telecommunications and Signal Processing (TSP), 2017, Spain	Member of technical program committee
	The 19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech Republic	Member of technical program committee
	Microwave and Radio Electronics Week 2017, Radioelektronika, Brno, Czech Republic	Member of technical program committee
Martin Vaculík	19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech Republic	Member of technical program committee
Miroslav Uhrina	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech republic	Member of technical program committee
Róbert Hudec	The 19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech Republic	Member of technical program committee
	40th International Conference on Telecommunications and Signal Processing (TSP), Spain	Member of technical program committee
Milan Dado	17th International Conference Knowledge in Telecommunication Technologies and Optics, Mlenovice, Czech Republic	Member of technical program committee
	19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
Miroslav Benčo	19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
Jozef Dubovan	19th International Conference Research in	Member of technical

	Telecommunication Technology 2017 (RTT 2017), Slovakia	program committee
Peter Kortiš	19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
Miroslav Markovič	19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
Daša Tichá	19th International Conference Research in Telecommunication Technology 2017 (RTT 2017), Slovakia	Member of technical program committee
Mária Franeková	17th International conference Transport Systems Telematics (TST2017), April 05-08, 2017, Katowice-Ustroń, Poland	Member of programme board
Aleš Janota	17th International conference Transport Systems Telematics (TST2017), April 05-08, 2017, Katowice-Ustroń, Poland	Member of programme board
	12th International Conference on Marine Navigation and Safety of Sea Transportation (TransNav 2017), June 21-23, 2017, Gdynia, Poland	Member of scientific - programme board
	XXI. International Conference TransComp, December 4-7, 2017, Zakopané, Poland	Member of scientific board
	15th International Symposium on Applied Machine Intelligence and Informatics (SAMI 2017), January 26-28, 2017, Herľany, Slovakia	Member of programme board
Karol Rástočný	17th International conference Transport Systems Telematics (TST2017), April 05-08, 2017, Katowice-Ustroń, Poland	Member of programme board
	23rd International Conference on Applied Electronic (AE 2017), September 05–06, 2017, Pilsen, Czech Republic	Member of programme board
	6th International Conference Advanced Rail Technologies (ART 2017), November 15–16, 2017, Warsaw, Poland	Member of programme board
	12th International scientific conference of young scientists, Ph.D. students and their tutors TRANSCOM, May 31, 2017- June 02, 2017, High Tatras, Slovakia	Member of programme board
	13th International conference on railway communication and safety technology (ŽOZT), March 27-29, 2017, Vyhne, Slovakia	Member of programme board
Juraj Spalek	17th International conference Transport Systems Telematics (TST2017), April 05-08, 2017, Katowice-Ustroń, Poland	Member of honorary board
	XII-th International Scientific and Technical Conference Computer Science and Information Technologies, September 05-08, 2017, Lviv, Ukraine	Member of programme board
	15th International Symposium on Applied Machine Intelligence and Informatics (SAMI 2017), IEEE, January 26-28, 2017, Herl'any, Slovakia	Member of programme board
	6th International Conference organized by Railway Research Institute and Faculty of Transport of Warsaw University of Technology, November 15–16, 2017, Warsaw, Poland	Member of scientific board
	12th international scientific conference of young scientists, Ph.D. students and their tutors TRANSCOM, May, 31, 2017- June –02, 2017, High Tatras, Slovakia	Member of scientific board in the ICT section
Juraj Ždánsky	17th International conference Transport Systems	Member of scientific

	Telematics (TST2017), April 05-08, 2017, Katowice-Ustroń, Poland	board
Rastislav Pirník	Automation and control in theory and practice (ARTEP 2017), February 15-17, 2017, Stará Lesná, Slovakia	Member of programme board
Ivo Čáp	Trends in Biomedical Engineering 2017, September 25-27, 2017, Horní Lomná, Czech Republic	Member of scientific committee
Klára Čápová	International Standing Committee of ENDE - International Workshop of Electromagnetic Nondestructive Evaluation	Member of programme and scientific committee
	XXII International Workshop on Electromagnetic Nondestructive Evaluation, September 6-8, 2017, Saclay, France	Member of programme and scientific committee
	Trends in Biomedical Engineering 2017, September 25-27, 2017, Horní Lomná, Czech Republic	Member of programme committee
	Joint Conference Computational Problems of Electrical Engineering and Advanced Methods of the Theory of Electrical Engineering, September 11-13, 2017, Kutná Hora, Czech Republic	Member of scientific committee
Ladislav Janoušek	Joint Conference Computational Problems of Electrical Engineering and Advanced Methods of the Theory of Electrical Engineering, September 11-13, 2017, Kutná Hora, Czech Republic	Member of scientific committee
Mariana Beňová	Joint Conference Computational Problems of Electrical Engineering and Advanced Methods of the Theory of Electrical Engineering, September 11-13, 2017, Kutná Hora, Czech Republic	Member of scientific committee
Milan Smetana	Joint Conference Computational Problems of Electrical Engineering and Advanced Methods of the Theory of Electrical Engineering, September 11-13, 2017, Kutná Hora, Czech Republic	Member of scientific committee
Alena Otčenášová	Conferences EPE 2017, Kouty nad Desnou, Czech Republic	Member of international scientific committee
Peter Braciník	21st International Conference ELECTRONICS 2017, Jun 19-21, Palanga, Lithuania	Member of programme committee
Pavol Rafajdus	SPEEDAM, ITALY, International Symposium on Power Electronics, Electrical Drives, Automation and Motion, Amalfi, Italy	Member of scientific committee

Individual membership of employees in scientific boards and trade commissions abroad		**Function**
Jarmila Müllerová	Branch Committee for PhD. Study in the study branch P 2301 Engineering of Special Technologies and Materials, University of West Bohemia, Pilsen, Czech Republic	Member
Pavol Špánik	Scientific board of FEI – VŠB - TU Ostrava, Czech Republic	Member
	Electronics Committee, FEI – VŠB TU Ostrava, Czech Republic	Member
	Electric machines, instruments and drives Committee, FEL ČVUT Prague, Czech Republic	Member
	Program committee of The Faculty of Electrical Engineering Silesian University of Technology, Gliwice, Poland	Member

Peter Brída	University of Hradec Králové, Faculty of informatics and management, Czech Republic	Member of scientific board
Róbert Hudec	VŠB TU Ostrava, Faculty of electronics and informatics, Czech Republic	Member of scientific board
Milan Dado	FD ČVUT Prague, Czech Republic	Member of scientific board
Peter Vestenický	VŠB-TU Ostrava, HGF, Czech Republic	Member of branch committee
Ivo Čáp	Branch committee of the PhD. study field „Theory of education in physics “, PrF University Hradec Králové, Czech Republic	Member
	Branch committee of the PhD. Study field „Theory of education in physics “, PrF University Ostrava, Czech Republic	Member
Milan Pospíšil	Departmental committee for PhD thesis defence in a field of Power Electrical Engineering at Faculty of Electrical Engineering, Ostrava and TU Ostrava, Czech Republic	Vice-chairman
	Departmental committee for Habilitation thesis defence in a field of Power Electrical Engineering at Faculty of Electrical Engineering, Ostrava and TU Ostrava, Czech Republic	Member
Pavol Rafajdus	CTU, Faculty of electrical engineering, Czech Republic	Member of scientific committee

Membership in National Institutions/Committees

Membership of the Department/-s in organizations of the SR	Department	Membership since
Slovak society for cybernetics and informatics at SAV (SSKI)	DCIS	2000

Individual membership of employees in organizations of the SR		Function
Jarmila Müllerová	Commission of the Scientific Grant Agency of the Slovak Republic VEGA No. 5 for Electrical Engineering, Automatization and Control Systems and Related Fields of Information and Communication Technologies	Member
Pavel Šimon	Chamber of Users and Producers of Renewable Energy	Vice-president
Peter Hockicko	Slovak Acoustic Society at SAS	Convenor of the Physical Acoustics Group
Jozef Kúdelčík	Slovak Physical Society Council	Member
Jozef Kúdelčík	Union of Slovak mathematicians and physicists	Member
Ivan Melo	Council for cooperation of SR with CERN	Member
Ivan Melo	Slovak Physical Society	Member
Štefan Hardoň	Slovak Physical Society	Member
Norbert Tarjányi	Slovak Physical Society	Member
Mikuláš Gintner	Slovak Physical Society	Member
Ivan Bellan	Slovak Physical Society	Member
Jana Ďurišová	Slovak Physical Society	Member
Peter Gašo	Slovak Physical Society	Member
Peter Hockicko	Slovak Physical Society	Member
Daniel Jandura	Slovak Physical Society	Member

Marián Janek	Slovak Physical Society	Member
Ivana Lettrichová,	Slovak Physical Society	Member
Ivan Martinček	Slovak Physical Society	Member
Dušan Pudiš	Slovak Physical Society	Member
Gabriela Tarjányiová	Slovak Physical Society	Member
Dagmar Faktorová	Slovak Medical Association, section: Company of Biomedical Engineering and Medical Informatics, Bratislava	Member EMBS
Miroslav Gutten	Council of Higher Education Institutions, Bratislava	Member
Pavel Pavlásek	Commission of Transport and Road Administration Port (The Žilina Self-governing region)	Member
	Commission of the Ministry of Education of Slovak Republic for Selection of Candidates for study in Slovak Republic within the Aid for Developing Countries and Compatriots	Member
Pavol Špánik	Working Group „Industry Technologies“ at the Ministry of Education, Science, Research and Sport of the Slovak Republic	Member
	Working Group „Electro-mobility“ at the Ministry of Economy of the Slovak Republic	Member
	Grant Commission for Scientific Grant Agency of the Slovak Republic VEGA No 5 for electrical engineering and informatics	Member
Libor Hargaš	National Robotics Centre, Bratislava	Member
Dušan Koniar	National Robotics Centre, Bratislava	Member
Vladimír Wieser	Permanent working group of Accreditation Commission for research area 16: Information science, automatization and telecommunications	Member
	Commission VEGA no. 5 for electrotechnics , automatization and control systems and related fields of information and communication technologies	Member
Ladislav Schwartz	Terminology commission of the Slovak Republic for Electronic Communications, VUS Banská Bystrica	Member
	Technical normalization committee TK-41 in Telecommunication section, SÚTN Bratislava	Member
Roman Jarina	Technical normalization committee TK-21 in Acoustics and mechanical oscillations, SÚTN Bratislava	Member
Róbert Hudec	Board of SRDA agency for technical sciences	Member
Milan Dado	Director board of Orange foundation	Head
	Director board of development agency ŽSK	Head
Mária Franeková	Technical standardisation committee TK 83 railway applications, SÚTN Bratislava	Member
	Profibus.sk association, FEI STU Bratislava	Member
	Slovak society for cybernetics and informatics at SAV (SSKI)	Member of main board
Aleš Janota	National robotics centre, Bratislava	Honorary member
	Scientific-technical association at UNIZA, Žilina	Member
	Technical standardisation committee TK104 Control of industrial processes, Slovak office of standards, metrology and testing, Bratislava	Member
	Slovak society for cybernetics and informatics at SAV (SSKI)	Member of main board
Karol Rástočný	Technical standardisation committee TK 83, SÚTN Bratislava	Member

Juraj Spalek	Scientific-technical association at UNIZA, Žilina	Member
	National robotics centre at FEI STU Bratislava	Honorary member
	Slovak society for cybernetics and informatics at SAV (SSKI)	Member of main board
	Slovak road society, Bratislava	Member of esafety workgroup
Ivo Čáp	Union of Slovak Mathematicians and Physicists	Co-chairman
	Slovak Medical society, section of Biomedical Engineering and Medical Informatics, Bratislava	Member of board
	Physical Olympiad of the Slovak Republic	Chair of the Slovak committee
	European Union Science Olympiad	National coordinator
	Dionyz Ilovič Award 2017 for development of after-school activities	Member of jury
Klára Čápová	Slovak Medical Society, section of Biomedical Engineering and Medical Informatics, Bratislava	Member of supervisory board
Ladislav Janoušek	National scholarship programme of the Slovak Republic	Member of joint selection committee
Alena Otčenášová	Chairman of the Commission for the first attestation in the category teacher and subcategory secondary school teacher for training electrical subjects – MŠVVaŠ SR	Chairman
	Chairman of the attestation commission for the second attestation in the category teacher and subcategory secondary school teacher for training electrical subjects – MŠVVaŠ SR	Chairman

Individual membership of employees in the scientific committees of national conferences		**Function**
Jarmila Müllerová	Alternative Energy Resources ALER 2017, scientific-expert conference, Bobrovec	Member of programme committee
Stanislav Jurečka	Alternative Energy Resources ALER 2017, scientific-expert conference, Bobrovec	Member of programme committee
Libor Ladányi	Alternative Energy Resources ALER 2017, scientific-expert conference, Bobrovec	Member of programme committee
Ľubomír Scholtz	Alternative Energy Resources ALER 2017, scientific-expert conference, Bobrovec	Member of programme committee
Gabriel Cibira	Alternative Energy Resources ALER 2017, scientific-expert conference, Bobrovec	Member of programme committee
Michaela Solanská	Alternative Energy Resources ALER 2017, scientific-expert conference, Bobrovec	Member of programme committee
Peter Bury	ADEPT 2017, Podbanské	Member of scientific committee
Ivan Dolnák	ICETA: International Conference on Emerging eLearning Technologies and Applications	Member of program committee

Individual membership of employees in editorial boards of national journals		**Function**
Branislav Dobrucký	Editorial board of the scientific journal ŽU - Komunikácie – vedecké listy (Communication - Scientific papers), ISSN (print version) 1335-4205, ISSN (online version) 2585-7878	Member of editorial board
Michal Frivaldský	Editorial board of the scientific journal ŽU - Komunikácie –	Member of editorial

	vedecké listy (Communication - Scientific papers), ISSN (print version) 1335-4205, ISSN (online version) 2585-7878	board
Pavol Špánik	Editorial board of the scientific journal ŽU - Komunikácie – vedecké listy (Communication - Scientific papers), ISSN (print version) 1335-4205, ISSN (online version) 2585-7878	Member of editorial board
Ivo Čáp	Horizons of mathematics, physics and computer sciences, Nitra, ISSN 1335-4981	Member of editorial board
Klára Čápová	Journal of Electrical Engineering, Bratislava, ISSN 1335-3632	Member of editorial board
Pavol Rafajdus	Communications, ISSN 1335-4205	Member of editorial board
Karol Rástočný	AT&P Journal, ISSN 1335-2237	Member of editorial board
Juraj Spalek	AT&P Journal, ISSN 1335-2237	Member of editorial board
Rastislav Pirník	Acta Technológia, ISSN 2453-675X	Member of editorial board

Individual membership of employees in the scientific committees of national conferences		**Function**
Branislav Dobrucký	ALER 2017, Liptovský Mikuláš, Boborovec	Member of program committee

Individual membership of employees in scientific boards and trade commissions outside of FEE UNIZA		**Function**
Jarmila Müllerová	Branch Committee at Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava in the study branch 4.1.4 Quantum Electronics and Optics	Member
Pavol Špánik	Mechatronics - Committee, Faculty of Mechanical Engineering, TU Košice	Member
	Board of directors of the University of Žilina	Member
	Scientific Board of the University of Žilina	Member
	Scientific Board of the Faculty of Mechanical Engineering, University of Žilina	Member
	Scientific Board of the JLFUK Martin	Member
	Scientific Board of the FEI TU Košice	Member
	Scientific Board of the FEI STU Bratislava	Member
Pavel Pavlásek	Technical Subjects Didactics Committee, UKF Nitra	Member
Vladimír Wieser	FEI, TU Košice	Member of branch committee
	AOS gen. M. R. Štefánika, Liptovský Mikuláš	Member of branch committee
Milan Dado	STU Bratislava	Member of scientific board
	FEI STU Bratislava	Member of scientific board
	FEI TU Košice	Member of scientific board
	JLF UK Martin	Member of scientific board

Mária Franeková	Branch committee study programme 5.2.14 Automation at MTF, STU Bratislava	Member
Aleš Janota	Branch committee study programme 9.2.9 Applied informatics, Faculty of management and informatics, UNIZA, Žilina	Member
Emília Bubeníková	Scientific-technical association at UNIZA, Žilina	Member
Juraj Spalek	Scientific Board FSI UNIZA, Žilina	Member
	Branch committee study programme 9.2.9 Applied informatics, Faculty of management and informatics, UNIZA, Žilina	Member
	Accreditation committee of the MŠVVŠ SR	Member of OV16 workgroup
Ivo Čáp	Branch committee of the PhD. study programme: „Theory of education in physics “, FMFI, Comenius university, Bratislava	Member
	Branch committee of the PhD. study programme: „Theory of education in physics “, FPV University of Matej Bell, Banská Bystrica	Member
	Branch committee of the PhD. study programme: „Theory of education in physics “, FPHV University of Prešov, Prešov	Member
	Branch committee of the PhD. study programme: „Medical biophysics “, Jessenius Medical Faculty CU, Martin	Member
Klára Čápová	Branch Committee for the PhD. study field “Theory of Electrical Engineering”, FEI STU, Bratislava	Member
	Branch committee of the PhD. study programme: „Medical biophysics “, Jessenius Medical Faculty CU, Martin	Member
	Branch Committee for the PhD. study field “Marginal States of Materials”, Faculty of Mechanical Engineering, UNIZA	Member
Ladislav Janoušek	Branch committee of the PhD. study programme: „Medical biophysics“, Jessenius Medical Faculty CU, Martin	Member
Milan Smetana	Branch committee of the PhD. study programme: „Medical biophysics “, Jessenius Medical Faculty CU, Martin	Member

MAIN TASKS OF THE FACULTY FOR THE YEAR 2018

The development of the FEE will be realized in accordance with the framework program of the Faculty for the period 2014-2020, which was approved by the Scientific Board of the FEE on the 12th of May 2014, while in the process will be incorporated knowledge obtained from the practical implementation of the activities proposed in the framework program. The basic strategic aim is permanent developing of the Faculty as a prestigious educational and research institution with a prominent place among Slovak faculties, which has a significant international recognition in the most offered study programmes and fields of research and development.

Quantifiable main tasks for the year 2018

Field of education

- continue the mentoring program for first year students of Bachelor study;
- get better feedback from students about their satisfaction with the education provided at the Faculty;
- organization of a meeting of the faculty management with doctoral students and their supervisors and a meeting with academic community of the Faculty at least once a year;
- within the marketing activities, continue the implementation of at least one action directed towards primary schools and ten actions directed towards secondary schools in order to inform students of schools about study possibilities at the FEE;
- organization of open-door actions towards secondary school students;
- in the context of improving the cooperation with secondary schools, to offer individual visits of secondary school students to the Faculty in the form of specialized laboratory exercises;
- start preparing for a new accreditation by the study programs offered by the Faculty.

Field of science and research

- active participation at annual meetings of the management of faculties of electrical engineering and related orientations of FELAPO 2018;
- participation in the organization of at least 5 other conferences/ seminars/ events;
- in accordance with plans to realize the qualification growth of faculty members;
- organization and promotion of Student Scientific Competitions for all three study degrees and to focus attention on the possibility of participation of the faculty students at the organized national and international students' competitions;
- monitoring and at least twice a year evaluation of accreditation criteria;
- evaluation of the submitted project proposals to national and international funding agencies twice a year;
- improve the cooperation with industrial partners and other institutions.

Field of international cooperation

- development of tools for more efficient engagement of research groups in the EU Framework Programme for Research and Innovation HORIZON 2020 and other European programs as EUREKA, COST, cross-border cooperation and cooperation with foreign industrial partners;
- improve the propagation and support of students and teachers mobility in line with internationalization of education;
- more effective conclusion of bilateral agreements;

- attractiveness of the faculty's educational system for international students;
- establishment of the H2020 Working Group at the Faculty, aiming to increase the success of Faculty's participation in H2020 projects;
- creation of the English version of the offer of the scientific research activities carried out at the Faculty.

Contacts and Address

Academic Officials

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