
ANNUAL REPORT

FEE&I

Technical University of Košice
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Departments of Faculty and their Heads

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Foreword / Welcome from the Dean of the Faculty

Our goals:

We intend, we want ..

“.. to be an attractive but simultaneously a pretentious faculty for students for whom the diploma awarded will open the doors on the job market,

.. to be an important research centre in field of electrical engineering and informatics both at home and abroad,

.. to be a faculty with friendly relations and excellent collegial atmosphere which enables creative activity of the teaching and research staff in hand with our students.”



Ladies and Gentlemen,

It is my great pleasure to send you greetings from Slovakia as a Dean of Faculty of Electrical Engineering and Informatics, Technical University in Košice. Slovakia is a country in central Europe. Our University is located in the Eastern Slovakia and we are very proud to live in the city of Košice, which is an old historical city with many historical buildings and places. Košice is also cultural and social centre of the Eastern part of the country and the second biggest city in Slovak Republic. Technical University in Košice has overall more than 13 000 students in 9 faculties.

Allow me to introduce Faculty of Electrical Engineering and Informatics, Technical University in Košice in Slovakia. Faculty is a school with approx. 2500 students and 200 teachers and research associates. We have 170 PhD students in our courses. We offer more than 250 courses for university education including Bc. (BSc.), Ing. (MSc.) and PhD in 3 main branches: *Informatics, Telecommunications, Electric Power Engineering and Electrical Engineering*. More details about particular specialization can be found in this publication.

Our teachers and research associates are highly qualified persons and also very active in educational and research projects mainly in international co-operation. Faculty takes active role in 10 educational and 14 research international projects granted by agencies from EEC countries and USA and also participates on more than 60 research projects granted by Slovak agencies. All this activity brings very interesting and highly valuable results.

There is a small community of 15 foreign students studying at our faculty. We hope that this community will grow and will appreciate our skills and good conditions for study here in Košice.

The main role of this publication is to inform you about results of the Faculty for last year and also warmly invite readers for mutual co-operation and international contacts. We are open to any discussions about educational and research problems and we would highly appreciate any opportunity to meet with colleagues from other countries. I would like to express a warm invitation for our potential future students and underline that we provide a high profile teaching courses by experienced teachers and research associates.

Yours Sincerely

prof. Ing. Liberios Vokorokos, PhD.

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Košice and the Technical University



Košice – the metropolis of Eastern Slovakia – has more than 750 years rich history. It is an important administrative, business and industrial center, important crossing of road, railway and air traffic. The downtown has been reconstructed in last years and at present it belongs to the most beautiful and lovely cities in Slovakia. Towering over the center there is the gothic cathedral of St. Elisabeth, completed in 1508, the biggest and most important gothic monument and the only one of this kind in Eastern Europe. The town center is completed by the gothic St. Michael's Chapel and the East Slovak Theatre – imposing construction build in Neo-Baroque style. At present there are approx. 240 thousands inhabitants in Košice and it is the second largest city in Slovakia.



The Technical University of Košice was established in 1952, but in the fact, the origin and roots of two from their faculties go back to the 18th century and they are derived from the Mining Academy in Banská Štiavnica. The University is a state-supported institution. At present, the University consists of eight faculties. It has more than 7 500 Master's and Bachelor's degree students, about 400 PhD. students and 900 academic staff members.



Faculty of Electrical Engineering and Informatics

The Faculty of Electrical Engineering and Informatics, has been one of the leaders in Slovak technical higher education since its establishment in 1969. Faculty consists of 9 departments, one Centre of IT and a computing centre. The departments of the Faculty are located in the campus of the Technical University, which is located in 10-min. walk distance from the city center.

The Faculty is committed to providing its students with the best possible experience of education for their future career and leadership in their profession, for admission to advanced degree programs, and for lifelong learning. The faculty offers a wide variety of full-time and part-time courses, which are relevant to industry's needs. Graduates leave our departments well equipped to meet the needs of industry and development/research institutions and get their jobs with ease.

Statistics

- Present number of faculty staff members is 176 university teachers, among them: 34 professors, 42 associate professors, 100 assistant professors, 21 research workers, 45 administrative staff and technicians, 8 workers.
- The number of MSc. students is approximately 1 711 and number of BSc. students is approximately 2339 every year.

MSc. courses, leading to the title Ing.:

Year	1 st	2 nd	3 rd	4 th	5 th	Total
2004/2005	859	336	417	337	369	2317
2005/2006	9	447	271	417	326	1470
2006/2007	-	-	421	264	413	1098
2007/2008	10	9	-	422	256	697
2008/2009	345	9	-	-	416	1711

Bc. courses, leading to title Bc.:

Year	1 st	2 nd	3 rd	Total
2004/2005	105	15	4	124
2005/2006	935	34	16	985
2006/2007	1117	515	25	1657
2007/2008	1075	601	384	2060
2008/2009	1092	663	584	2339

The overview of distribution of students by subject area (number of students vs. branches of study) in the academic year 2008/09 is following.

Branch of study	1 st	2 nd	3 rd	4 th	5 th	Total
Computer Science and Information Technology	-	-	-	-	137	137
Control Engineering and Automation	-	-	-	-	27	27
Electronics and Telecommunication Systems	-	-	-	-	75	75
Electric Power Engineering	77	65	34	54	33	263
Electrical Drives	-	-	-	-	27	27
Material Engineering	-	-	-	-	5	5
Industrial Engineering	70	27	69	34	63	263
Artificial Intelligence	-	-	-	38	58	96
Informatics	370	256	226	89	-	941
Electronics	19	21	19	-	-	59
Mechatronics	18	21	-	-	-	39
Telecommunications	95	57	81	-	-	233
Cybernetics	46	57	64	-	-	167
Electrical Engineering	19	17	20	24	-	80
Applied Informatics	51	26	-	-	-	77
Business Informatics	195	74	41	-	-	320
Total	960	621	554	150	425	2720

Faculty Organization and Resources

DEAN'S OFFICE

The dean's office manages the Faculty life and offers services both for the students and staff members.

Management of the Faculty

Dean: prof. Ing. Liberios Vokorokos, PhD.

Vice-deans: doc. Ing. Roman Cimbala, PhD.

doc. Ing. Iveta Zolotová, CSc.

prof. Ing. Alena Pietriková, PhD.

doc. Ing. Ľubomír Doboš, PhD.

Faculty Secretary: JUDr. Mária Homzová

responsible for development and public relations
responsible for education in the bachelor and master study
responsible for research and doctoral study
responsible for foreign relations, mobility and projects
responsible for financial matters and dean's office management

FACULTY ACADEMIC BODIES

The Faculty Scientific Council Faculty and the faculty Academic Senate creates academic bodies of the Faculty having many control and checking functions and responsibilities that are stated in the Faculty Ruling Guide.

Faculty Scientific Board

The Scientific Board is an advisory board to the dean. The members of the Faculty Scientific Board are grouped from the vice-deans, heads of departments, professors and representatives from co-operating industrial companies. The Scientific Council plays decisive role at the Faculty development, orientation and research.

Faculty Academic Senate

The Faculty Academic Senate is the highest-level self-governmental body of the Faculty and is authorized to control and approve activities and issues of the Faculty Presidium. Every department elects one staff member as a representative into the Faculty Staff Chamber of the Faculty Academic Senate. Students also have their representatives in the Students' Chamber.

Professors Board

Professors Board is an advisory board to the dean. The members of the Professors Board are grouped from professors and extraordinary professors of faculty. Board was created from 1st of February 2007 and prepared references for dean of faculty.

DEPARTMENTS

The faculty consists from the following departments:

abbr. (In Slovak language)

Department of Cybernetics and Artificial Intelligence	KKUI
Department of Computers and Informatics	KPI
Department of Mathematics	KM
Department of Electronics and Multimedia Telecommunications	KEMT
Department of Technologies in Electronics	KTE
Department of Physics	KF
Department of Theoretical Electrotechnics and Electrical Measurement	KTEEM
Department of Electrical, Mechatronics and Industrial Engineering	KEMPI
Department of Electric Power Engineering	KEE

LABORATORIES

Each department has its own teaching and research laboratories that are described in the part concerning the department. Among the most important and largest specialized laboratories can be included the following ones:

- Laboratory of Speech Technologies in Telecommunications
- Computer Networks Laboratory
- Cyber Lab

- High Voltage Hall
- Center for Intelligent Technologies
- Laboratory of Automotive Electronics
- Centre of Advanced Digital Signal Processing
- Laboratory of Technologies in Electronics

FACULTY COMPUTER CENTRE

Address: Park Komenského 2, 042 00 Košice, Slovak Republic
Tel: ++421-55-602 4007
Fax: ++421-55-602 2249
Web: <http://www.tuke.sk/fei-PC>
E-mail: Liberios.Vokorokos@tuke.sk
Head of the Centre: prof. Ing. Liberios Vokorokos, PhD.

The Centre offers services in field of computer technology: it maintains and supports majority of the faculty computing facilities both in HW and SW. It also is responsible for maintenance and operation of the faculty computer network and networks information services, four PC laboratories with 50 personal computers that are working 24 hours/day and is also responsible for the faculty information system. Each student of the Faculty has a free access to the Internet.

Staff members

Total number of staff members is 12: Liberios Vokorokos, Peter Popovec, Eva Boszörmenyová, Marek Andričík, Ľubomír Hodulík, Tomáš Baláž, Martin Kiss, Alena Focková, Jana Trelová, Henrieta Marchevská, Martin Tomášek, Slavomír Šimoňák.

CENTRE FOR INFORMATION TECHNOLOGIES

Address: Boženy Němcovej 3, 042 00 Košice, Slovak Republic
Tel: ++421-55-6024128
Fax: ++421-55-6024128
Web: <http://www.tuke.sk/fei-cit>
E-mail: Jan.Paralic@tuke.sk
Head of the Centre: doc. Ing. Ján Paralič, PhD.

Centre for Information Technologies (CIT) is a common research center of the Institute of Informatics, Slovak Academy of Sciences in Bratislava and Technical University in Košice, which has officially started its activity of February 1, 2005. CIT is organizationally incorporated into Faculty of electrical Engineering and Informatics, Technical University in Košice, The main task of CIT is to perform common research in the areas of applied computer science, information technology, cybernetics and artificial intelligence. This is the way that CIT tries to achieve the vision of Technical University of Košice to become a research university. CIT provides appropriate conditions for common research in computer science and applied informatics for academic workers and PhD-students from different faculties and departments of the Technical University in Košice as well as Institute of Informatics, Slovak Academy of Sciences.

Staff members

Within CIT, the following researchers are working full or part time. From the Technical University in Košice: Ján Paralič, Karol Furdík, Peter Bednár, Jozef Wagner, Marek Paralič, Martin Sarnovský, František Babič. From the Slovak Academy of Sciences: Ján Astaloš, Marián Babík, Tomáš Kasanický, Tomáš Darányi, Bartolomej Barra.

EDUCATION AND COURSES

Courses offered

The Faculty offers three types of full-time and part-time courses:

- Bachelor's Degree courses (3years) leading to degree Bc.
- Master's Degree courses (5 years) leading to degree Ing.
- Doctoral Study courses (3years) leading to degree PhD.

in various branches of study in electrical, electronic, automation and communication engineering and informatics.

Bachelor courses

Bachelor's Degree course lasts in normal way 3 years. The graduates get more-or-less practical skills in mastering

- Informatics
- Cybernetics
- Electrical Engineering
- Electric Power Engineering
- Electronics
- Industrial Engineering
- Information and Control Systems in Mechatronics
- Telecommunication
- Automotive Electronics
- Automotive Mechatronics
- Applied Informatics
- Intelligent systems
- Computer modeling
- Physical Engineering of Modern Materials

Master's Degree courses

Master's degree course lasts in normal way 2 years. The graduates are oriented towards the selected branch of specialization:

- Informatics
- Automation
- Multimedia Telecommunication
- Electrical Engineering
- Electric Power Engineering
- Technologies in Electronics
- Physical Engineering of Modern Materials
- Industrial Engineering
- Artificial Intelligence

- Cybernetics
- Infoelectronics
- Business Informatics
- Material Engineering

PhD. courses

Ph.D. course last in normal way 3 years:

- Automation
- Electric Power Engineering
- Electrical Engineering Systems
- Electrotechnologies and Materials
- Infoelectronics
- Informatics
- Cybernetics
- Measurement Technique
- Telecommunications
- Artificial Intelligence

Courses are available on full-time basis. One semester normally lasts 14 weeks and includes between 22 and 26 contact hours per week. The last semester is devoted to the independent work on final project done either at the faculty either in a real workplace situation. The learning activities cover traditional lectures, laboratory work, and seminars. Assessment methods vary from course to course and they consist of assignments, case studies, and examinations.

CREDIT-BASED SYSTEM

In all classes at the Faculty there is introduced a credit system enabling the student to choose the subjects according to their interests and to take the best pace of learning. In the first two years there are compulsory subjects for all students giving no freedom for choice. Since the third year, except several compulsory subjects, the student can choose from the list of optional subjects. Each subject is evaluated by a number of credits (usually 4-7). After passing the exam from the subject the student received the credits that are accumulated and the student should collect their minimum number (60) to pass the current year. Registration of the subjects is done before the beginning of the current academic year. The details about the subjects and allocated numbers of credits are given in the Program of Study.

RESEARCH AND DEVELOPMENT

Research at the Faculty departments is oriented towards the following main fields:

- broadband information and communication systems,
- digital signal processing and information transmission in telecommunications,
- specialized computer architectures,
- artificial intelligence applications, mainly knowledge management and computational intelligence,

- modelling and control of complex discrete systems,
- motion control using electrical drives,
- power electronics converters,
- SW and HW development for distributed control of complex drive systems,
- development of non-destructive methods for diagnostics and prophylactics of HV and UHV equipment in electric power systems,
- research and development of three-dimensional sensorial systems for plasma technologies based on special ceramic structures,
- modelling of electric power systems and equipment for their effective utilization and taking into consideration environment protection.

There are national and international projects at the Faculty. The national projects are supported by:

- The Scientific Grant Agency (VEGA) at Ministry of Education of Slovak Republic (grant research),
- The Cultural and Educational Grant Agency (KEGA) at Ministry of Education of Slovak Republic
- Slovak Research and Development Agency (APVV)
- Agency of the Ministry of Education of the Slovak Republic for the Structural Funds of the EU (Agency)

Overview of the research projects, which were co-ordinate by the Faculty staff members:

Category of projects	Number of projects
COST projects (international)	5
6 th EU program	1
7 th EU program	2
Slovak – Czech program	2
Slovak – Bulgarian program	1
Slovak – Ukrainian program	1
Slovak – Slovenian	1
CEEPUS	2
Leonardo da Vinci	4
Erasmus program	2
Tempus program	1
Other International Projects	3
Subtotal	25
National projects supported by VEGA	31
National projects supported by KEGA	16
National projects supported by APVV	11
National projects supported by Agency	1
Total	84

The projects are described in detail in the chapters giving the description of the departments.

The Faculty has intensive co-operation with industry: the most of results of applied research is realized in industrial enterprises. In 2009 there were accomplished 29 projects of such category at the Faculty.

The departments of the Faculty organize scientific conferences held usually in two-year intervals.

The following meetings, exchanges, international conferences and conferences with international participation were prepared:

- *7th Slovak – Hungarian Joint Symposium on applied Machine Intelligence (SAMI 2009 - <http://www.sami.tuke.sk/2009>) has been organized in Herľany, Slovakia, January 29-31*
- *SeS2009 - Scientific Seminar on Electric Insulation Aging. 26.–27.3.2009, Tatranská Štrba - High Tatras, Slovak Republic.*
- *STRAPING'09: Seminar and Meeting of Industrial Engineers, May 15-17, 2009, Herľany, Slovakia*
- *High-Tech Workshop, Herľany 2008 (May 29 -31, 2009). High-Tech (as the abbreviation of High-Technology) presents an engineering workshop aimed to the informal exchange of ideas of teachers, students, graduates and colleagues from practise in the Educational and Training Centre of Technical University of Košice in Herľany (www.gejzir.sk). Organiser: Perduková D. More information about this activity is to be found in www.tuke.sk/hth.*
- *9th International Student Workshop on Data Analysis (WDA 2009) has been organized in Čertovica, Slovakia, July 2-4*
- *Organising of ELEKTROENERGETIKA 2009 - the 5th International Scientific Symposium, 23.9. – 25.9.2009, High Tatras – Stará Lesná, Slovak Republic.*
- *15th International and 3rd Croatian-Slovak Conference on Electrical Drives and Power Electronics, Dubrovnik, 10- 15 Oct. 2009. Our department played a role of the conference co-organisers there.*
- *Organization of the scientific conference Physics of Materials '09 on 14 – 16 October 2009 in Košice.*
- *Specialized Seminar: The Future of Slovak Electrical Engineering, 5.-6.11.2009, Šarpanec - High Tatras, Slovak Republic.*
- *4th Workshop on Intelligent and Knowledge oriented Technologies (WIKT 2009) has been organized in Herľany, Slovakia, November 12-13*
- *ICETA 2009 – 7th International Conference on Emerging e-Learning Technologies and Applications, November 19 – 20, 2009, Stará Lesná, The High Tatras, Slovakia (DCI co-operation)*
- *INFORMATICS'2009 – 10th International Scientific Conference on Informatics, November 23-25, 2009, Herľany, Slovakia*

INTERNATIONAL CO-OPERATION

International co-operation presents one of the most important activities of the Faculty. The Faculty policy is oriented:

- towards creating conditions for co-operation in science and technology with the centers in Europe and USA,
- to increase the number and quality of the international research and educational projects,
- to support the mobility of the staff members to foreign institutions,
- towards acceptance the university teachers at the faculty for a certain teaching period,
- to increase the number of international students studying at the Faculty.

Except of co-operation with the partners' faculties in framework of Technical University's contracts there are several signed contracts with the company and faculties of the following universities: University of Oradea (Romania), Politechnika Czestochowska (Poland), Technical University of Ilmenau (Germany), The

University of West Bohemia in Pilsen (Czech Republic), Faculty of Electrical Engineering, Czech Technical University, Prague (Czech Republic), Budapest University of Technology and Economics (Hungary), Université Jean Monnet de Saint-Etienne (France).

In framework of international co-operation, the Faculty is currently involved in the following projects:

6th EU Framework

- Developing Knowledge Practices - Laboratory (abbr. KP-Lab, co-ordinator: Ján Paralič, department: CIT)

7th EU Framework

- Intelligent Information System Supporting Observation, Searching and Detection for Security of Citizens in Urban Environment (abbr. INDECT, co-ordinator: Ľubomír Doboš, department: KEMT)
- Perceptual, Contextual and Crossmodal Learning in Hearing and Vision (abbr. Learn2Hear&See, co-ordinator: Norbert Kopčo, department: KKUI)

CEEPUS program

- Active Methods in Teaching and Learning Mathematics, CII-HU-0028 (co-ordinator: Štefan Berežný, department: KM)
- International Cooperation in Computer Science, CII-HU-0019 (co-ordinator: Ladislav Samuelis, department: KPI)

Leonardo da Vinci program

- E-Learning Education and Continuing Training to Electronics Assembling Technology (abbr. ELECT2EAT, co-ordinator: Alena Pietriková, department: KTE)
- Development of competences of educational staff by integrating operational tasks into measures of vocational training and further education (abbr. ComEd, co-ordinator: Alena Pietriková, department: KTE)
- E-Learning in Distributed Data Network Laboratory (abbr. EDINET, co-ordinator: František Jakab, department: KPI)
- Innovation Transfer Network (abbr. IN.TRA.NET, co-ordinator: Ján Šaliga, department: KEMT)

COST projects

- Propagation Tools for Integrated Telecommunication and Earth Observation Systems – COST ICO0802 (co-ordinator: Ján Turán, department: KEMT)
- High Altitude Platforms (HAPs) for Communications and Other Services – COST 297 (co-ordinator: Pavol Galajda, department: KEMT)
- Connection Admission Control Algorithms for mobile communication systems with inherent intelligence for QoS support – COST 2100 (co-ordinator: Ľubomír Doboš, department: KEMT)
- Cross-Modal Analysis of Verbal and Non-verbal Communication – COST 2102 (co-ordinator: Anton Čížmár, department: KEMT)

- Advanced Solder Materials for High Temperature Application (abbr. HISOLD, co-ordinator: Alena Pietriková, department: KTE)

Slovak – Czech program

- Spolupráca v oblasti návrhu a implementácie jazykových systémov (co-ordinator: Jaroslav Porubän, department: KPI)
- Diagnostika a optimalizácia použitia ekologických materiálov pre vodivé spájanie v elektronike (co-ordinator: Alena Pietriková, department: KTE)

Slovak – Bulgarian program

- Využitie FACTS zariadení v elektrizačných sústavách (co-ordinator: Michal Kolcun, department: KEE)

Slovak – Ukrainian program

- Formálne špecifikácie programových systémov (co-ordinator: Štefan Hudák, department: KPI)

Slovak – Slovenian program

- Evolúcia softvéru na základe adaptácie jazyka (co-ordinator: Ján Kollár, department: KPI)

Socrates projects

- Enhancing Lifelong Learning for the Electrical and Information Engineering Community (contact: Ján Liguš, department: KKUI)

Tempus projects

- Adaptive Information and Communication Technologies for Education of Visually Impaired Students in Ukraine (abbr. EduVisIm, co-ordinator: Štefan Hudák, department: KPI)

INTERNATIONAL STUDENTS

Basic Information

Applications are very welcome from students from other countries and the Faculty accepts the students from abroad for all types of courses. For the international students there are two possibilities to study at the Faculty: either they will cover expenses by themselves or they can apply for scholarship. In this case they should contact:

International Co-operation of Ministry of Education of Slovak Republic

Address: Stromová 1, 813 30 Bratislava, Slovak Republic

Phone: +421-2-59374111, Fax: +421-55-54773986

E-mail: inform@minedu.sk, Web: <http://www.minedu.sk>

For the international students we offer the MSc./BSc. courses In English.

Another possibility is to study Slovak language during one additional year (full-time two-semester study) and then to enroll a course In Slovak language. This period is considered to be satisfactory.

Entry Requirements

Applicants from foreign countries will be admitted without any examination on the basis of credentials certifying completion of preparatory studies:

- The requirement for the BSc. and MSc. degree courses is a High School/Secondary School Graduation Certificate, and sufficient English for English speaking courses.
- The requirement for the PhD. courses is the MSc. graduation certificate.

How to Apply

International students applying for admission (whether straight from high school, transfer from another higher education institution, or re-entrance after a period of time out of school) should contact Dean's Office (the address is in beginning of this book - in the chapter "Contact") and require an Application Form.

The following documents should be sent to the Dean's Office:

- *Letter of inquiry explaining educational history (a brief Curriculum vitae)*
- *Filled-in Application Form*
- *A certificate about completed education*
- *Recommendation Letter (from the previous school or workplace, etc.)*

For international students there is only one date to start the study on the 1st September (closing date 30 June). Enrolment takes place several days before the courses start.

Tuition Fees

Tuition fee for the two-semester school year is given in table. These fees include the general service and student activity.

Form of Study	Duration of Semester	Education method	Fees for 1 academic year
Study in English			
Bc. (BSc. Equivalent) courses	8 weeks	Standard	4.500 EUR
Ing. (MSc equivalent) courses	8 weeks	Standard	5.000 EUR
PhD. courses-daily	36 months	Standard	6.000 EUR
PhD. courses-external	60 months	Standard	3.000 EUR
Study in Slovak			
Bc. (BSc. Equivalent) courses	13 weeks	Standard	2.000 EUR
Ing. (MSc equivalent) courses	13 weeks	Standard	3.000 EUR
PhD. courses-daily	36 months	Standard	4.000 EUR
PhD. courses-external	60 months	Standard	2.000 EUR

(valid for academic year 2008/2009, for actual rates contact the Dean's office)

The prices are subject to negotiations according to individual consultations. In case of larger group of students some discounts could be offered. Students are obliged to pay the tuition fee to the Faculty.

Tuition

In any matter the international students should contact the vice-dean responsible for international affairs who is serving as an initial point of contact

within the faculty and is there to help with any problems.

Accommodation

Students can find accommodation in university dormitory. All new students should contact the dean's office with requirement for accommodation. The Faculty has free single-bed rooms in the campus accessible from the main site of the university by tram. The rooms in University Student Hostel are equipped with telephone and access to Internet – free of charge for our students. We can also arrange an appropriate accommodation in any hotel or pension in Košice.

Students' Life, Organizations and Clubs

Students have their self-government bodies. There are active student organizations as I.A.E.S.T.E. and BEST at the University that are organizing various activities for students starting by student exchanges and mobility.

I.A.S.T.E. (International Association for the Exchange of Students for Technical Experience) is an organization supporting practical training of the students during the time of their study by organizing, preparing and co-ordinating the training both at home and abroad. During the training period the students learn a lot about new methods, technologies, and materials.

BEST (Board of European Students of Technology). The local BEST group belongs to the network of 35 boards within the top-level universities in 19 countries. The aim of the group is to provide students of the Technical University with information about student events all over Europe.

There is also three students' clubs at the University. The students can join also the cultural clubs. The Collegium Technicum, an internationally known mixed choir consisting of singers grouped from students and staff members is well known.

Sport and Recreation

Wide range of activities catering for all interest and levels of ability is possible to perform during university studies. On-site, facilities include a gymnasium and fitness centre. The university location is ideal for full range of outdoor activities – water sports, skiing at the artificial ski slope within city limits or in nearby skiing centre, climbing and tourist activities as well.

DEPARTMENT OF ELECTRIC POWER ENGINEERING

<http://www.tuke.sk/fei-kee>
Tel.: ++421 55 602 3551, Fax: ++421 55 602 3552

Head of Department
prof. Ing. Michal Kolcun, PhD.
E-mail: Michal.Kolcun@tuke.sk



1 DEPARTMENT'S PROFILE

The Department of Electric Power Engineering at Technical University of Košice is one of the profiling departments of Faculty of Electrical Engineering and Informatics. It was founded on the 1st October 1973 as the independent science and research unit of the faculty. The most important structural changes of the department are:

- integration of the original department with the Department of Electrical Heating and Electrochemistry on the 1st September 1981,
- incorporation of the Department of High Voltage into the Department of Electric Power Engineering on the 1st October 2003.

These changes were reflected to department activities and staff development.

The Department of Electric Power Engineering currently has 2 professors, 4 associate professors, 10 assistant professors, 3 scientific workers and 7 internal PhD. students.



According to the last accreditation, the Department of Electric Power Engineering guarantees these study programmes:

- Electric Power Engineering in bachelor, master and doctoral degree courses,
- Electrical Engineering in bachelor degree course.

The department is responsible for education of fundamental subjects of the study programmes: Transmission and Distribution of Electricity, Electric Power Plants, Electric Power System Operation, Electric Installation and Overhead Lines, Diagnostics of Electrical Power Engineering Equipments, Unconventional Power Sources, Electro Heat and Lighting Engineering.

The department provides the education of electrical engineers, self-employed electrical engineers and electrical engineers for activities supervision or operation supervision in the range for electrical devices without voltage constraint including lightning conductors for objects without detonation risk.

The department develops educational process also in cooperation with foreign universities using ERASMUS programmes.

The department staff has worked on several national and international grant projects, focused on:

- Control of Electric power system of Slovak Republic and electricity market in conditions of European Union,
- Utilisation of artificial intelligence elements for electric power engineering control processes,
- Electrical relays and electric power system stability,
- Solving of overhead power lines mechanics in three dimensional space,
- Illumination of spaces and lighting sources,
- Solar devices with optimal efficiency, solar system properties,
- Diagnostics of electric power equipments.
- High-quality results of science and research activities of the department staff are confirmed by the wide cooperation with the electric power companies (SEPS, VSE, Siemens, ABB, etc.).

The Department of Electric Power Engineering at FEI TU of Košice is the only department in Slovakia with accredited study programmes in all three degree levels of university studies.

2 STAFF

Professors: prof. Ing. Michal Kolcun, Ph.D.
prof. Ing. Iraida Kolcunová, Ph.D. (since July 2009)
prof. Ing. Karol Marton, DrSc.
Dr. Ing. Peter Birkner (guest professor)

Associate Professors: doc. Ing. Roman Cimbala, Ph.D.
doc. Ing. Iraida Kolcunová, Ph.D. (until June 2009)
doc. Ing. Pavel Novák, CSc.
doc. Ing. Ladislav Varga, Ph.D.

Assistant Professors: Ing. Jozef Balogh, Ph.D. (since October 2009)
Ing. Ľubomír Beňa, Ph.D.
Dr. Ing. Bystrík Dolník

Ing. Jaroslav Džmura, Ph.D.
Ing. Daniel Hlubeň, Ph.D.
Ing. Marek Hvizdoš, Ph.D.
Ing. Stanislav Ilenin, Ph.D.
Ing. Juraj Kurimský, Ph.D. (since October 2009)
Ing. Dušan Medveď, Ph.D.
Ing. Alexander Mészáros, Ph.D.
Ing. Jaroslav Petráš, Ph.D. (since October 2009)
Ing. Jozef Rusnák, Ph.D.
Ing. Ján Tkáč, CSc.

Senior Scientists: prof. Ing. Karol Marton, DrSc. (part time)
Ing. Jozef Balogh, Ph.D. (until September 2009)
Ing. Juraj Kurimský, Ph.D. (until September 2009)
Ing. Jaroslav Petráš, Ph.D. (until September 2009)

Technical Staff: Ladislav Danč
Dagmar Kramolišová
Bc. Jana Varnavčinová

Ph.D. Students: Ing. František Lizák (until September 2009)
Ing. Peter Semančík (until September 2009)
Ing. Maher A. A. Nasr
Ing. Vieroslava Čáčková
Ing. Lídia Dedinská
Ing. Milan Kvakovský
Ing. Ľudovít Csányi (since September 2009)
Ing. Matúš Katin (since September 2009)
Ing. Vladimír Krištof (since September 2009)
Ing. Stanislav Kušnír (since September 2009)
Ing. Martin Marci (since September 2009)

Staff of the VSE – East-Slovakian Power Energy deployed at the UHV testing facility:

Head: Ing. Pavol Csáji, Ph.D.

HV testing room: Ing. Ondrej Berta
Ing. Peter Stoličný
Pavol Duda
Peter Popovič

Department of prophylactic: Eugen Mórocz
Tibor Ferencz
Stanislav Ulík

3 LABORATORIES

Two PC Laboratories
Laboratory of Computer Relays
Laboratory of Electro-thermal Technologies

Laboratory of Environmental Protection
 Laboratory of Electrical Networks
 Laboratory of Electric Power Engineering Measurements
 Laboratory of Unconventional Power Source
 Laboratory of Lighting Engineering
 Laboratory of High Voltage Engineering
 Laboratory of Insulating System Diagnostics
 Laboratory of Electrostatics
 Laboratory of Partial Discharges
 Laboratory of High Fields
 Laboratory of Transient Overvoltage Protection of Computer Networks and Electronic Equipment
 Laboratory of Intelligent Systems
 Ultra High Voltage Testing Laboratory
 Electric Power Systems Control Laboratory, Joint Laboratory of Department of Electric Power Engineering TU FEI Košice and ABB ELEKTRO, Ltd., Bratislava

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (Hours per week)	Name of Lecturer
Fundamentals of Electrical Engineering	1 st	2/2	Beňa
Introduction to programming and networks	1 st	3/2	Petráš
Technical documentation in informatics	1 st	1/2	Beňa
Programming	2 nd	3/2	Petráš
Computers in Electric Power Engineering	2 nd	2/1	Cimbala
Fundamentals of environmental engineering	2 nd	2/2	Mészáros
Power transmission	3 rd	2/2	Varga, Rusnák
Light technology	3 rd	2/2	Beňa, Hlubeň
Fundamentals of environmental engineering	3 rd	1/2	Mészáros
Designing in electric power engineering	3 rd	2/2	Ilenin
Electric Power Plants	4 th	2/2	Kolcun
Faults in Electric Power System	4 th	2/2	Rusnák
Conversion of Electrical Energy	4 th	2/2	Novák
Unconventional energy sources	4 th	2/2	Tkáč
Designing in electric power engineering	4 th	2/2	Ilenin
Light technology	4 th	2/2	Beňa, Hlubeň
Economy in the electric power engineering	5 th	2/2	Mészáros
Electromagnetic compatibility	5 th	2/2	Dolník
Electrical installation and substation	5 th	2/3	Varga, Ilenin
High Voltage Engineering	5 th	2/3	Kolcunová, Tkáč

Subject	Semester	Lectures/exercises (Hours per week)	Name of Lecturer
Operation of electric power plants	5 th	2/2	Džmura
Safety at work on electric devices	5 th	2/2	Balogh
Bachelor Thesis I	5 th	0/5	(Supervisors)
Overvoltage protection of computer networks	6 th	3/1	Dolník
Computer relaying in electric power system	6 th	2/3	Hvizdoš
Prophylactics of power engineering equipment	6 th	2/2	Kolcunová
Management and Marketing in Electric Power Engineering	6 th	2/2	Cimbala
Bachelor Thesis II	6 th	0/9	(Supervisors)
Electric Power System Operation	6 th	2/3	Kolcun, Rusnák

4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/exercises (Hours per week)	Name of lecturer
Simulation in Electric Power System	7 th	1/3	Medveď
Electrical Power Network I	7 th	2/2	Varga, Ilenin
Optimisation of Electric Power System Operation	7 th	2/3	Kolcun, Beňa
Quality and reliability of electric power delivery	7 th	2/2	Beňa, Hlubeň
Electromagnetic compatibility	7 th	2/2	Dolník
Electrical Heating and Electroheat Devices	7 th	2/2	Novák
Design of the illuminating systems	7 th	1/3	Beňa
Term project	8 th	0/4	(Supervisors)
Electrical Power Network II	8 th	2/2	Varga, Ilenin
Automatization of Electric Power Plant Service	8 th	2/2	Cimbala
Transient stability of power system	8 th	2/2	Džmura
Overvoltage protection of computer networks	8 th	3/1	Dolník
Electric power systems and the environment	8 th	2/2	Mészáros
Master Thesis I	9 th	0/4	(Supervisors)
Diagnostic in electric power engineering	9 th	2/2	Kolcunová
Software engineering environment	9 th	2/2	Cimbala
Protection Systems of Electric Power System	9 th	2/2	Hvizdoš
Fault Analysis of Electric Power System	9 th	1/3	Hvizdoš
Diploma project I	9 th	0/4	(Supervisors)
Electric Power System Control	9 th	2/2	Kolcun
New trends of the power system economy	9 th	2/2	Mészáros

Subject	Semester	Lectures/exercises (Hours per week)	Name of lecturer
Overvoltage protection of computer networks	9 th	2/2	Dolník
Master Thesis II	10 th	0/18	(Supervisors)
Liberalization of electricity market	10 th	2/0	Kolcun

4.3. Postgraduate Study (PhD.)

Subject	Semester	Lectures/exercises (Hours per week)	Name of Lecturer
Theoretical Electrical Engineering	1 st	0/2	Cimbala Jahnátek Kolcun Kolcunová Novák Varga Birkner
Thesis Project I	1 st	0/2	(Supervisors)
Analysis of Electric Power System	2 nd	0/2	Cimbala Jahnátek Kolcun Kolcunová Novák Varga Birkner
Thesis Project II	2 nd	0/2	(Supervisors)
Thesis Project III	3 rd	0/4	(Supervisors)
Scientific Activity I	3 rd	0/8	(Supervisors)
Subject of Specialisation	3 rd	0/2	Cimbala Jahnátek Kolcun Kolcunová Novák Varga
Thesis Project IV	4 th	0/2	(Supervisors)
Scientific Activity II	4 th	0/8	(Supervisors)
Scientific Activity III	5 th	0/12	(Supervisors)
Thesis Project V	5 th	0/2	(Supervisors)
Thesis	6 th	0/9	(Supervisors)

5 RESEARCH PROJECTS

- **Insulation Systems Ageing Research**, Slovak Research and Development Agency (APVV) No. APVV-20-006005, duration: 2006 - 2009, co-ordinator: Kurimský, J.
- **The Reliability of Overhead Transmission Lines (OHL) and Warming up of Bundled Conductors of High Voltage Lines (above 2 kA)**, Scientific Grant Agency project (S.G.A) No. 1/4070/07, duration: 2007 - 2009, co-ordinator: Varga, L.
- **Research of Electric Energy Losses in an Electric Power System**, Scientific grant agency project (S.G.A.) No. 1/4072/07, duration: 2007 - 2009, co-ordinator: Kolcun, M.

- ***Power Quality Analysis and Proposal of Solutions to its Improving in Deregulated Market with Electricity***, Scientific grant agency project (S.G.A.) No. 1/4075/07, duration: 2007 - 2009, co-ordinator: Rusnák, J.
- ***Complex analysis and optimisation of electricity losses in Electric Power System***, Slovak Research and Development Agency (APVV) No. APVV-0385-07, duration: 2008 - 2010, co-ordinator: Kolcun, M.
- ***Research of Influence of Degradation Factors on Electro-physical Structure of High Voltage Insulation Materials***, Scientific grant agency project (S.G.A.) No. 1/0368/09, duration: 2009 – 2011, co-ordinator: Cimbala, R.
- ***Use FACTS Devices in the Electric Power Systems***, Slovak Research and Development Agency (APVV) No. SK-BG-0010-08, duration: 2009 - 2010, co-ordinator: Kolcun, M.
- ***Innovation of Education of Subjects Oriented on Lighting Technique***, Cultural and Educational Grant Agency project (KEGA) No. 3/7122/09, duration: 2009 - 2011, co-ordinator: Kolcun, M.

6 CO-OPERATION

6.1. Co-operation in Slovakia

- Institute of Experimental Physics, Slovak Academy of Sciences, Košice
- Slovak Power Plants, Inc. (SE, a.s.), Bratislava
- Power Plant EVO, Vojany
- Power Plant ENO, Nováky
- Hydro Power Plants VET, Trenčín
- Nuclear Power Plant EBO, Jaslovské Bohunice
- Heat and Power Plant TEKO, Košice
- Slovak Electric Transmission System, Inc. (SEPS, a.s.), Bratislava
- VSE - East Slovakia Power Engineering, Inc., Košice
- SSE - Centre Slovakia Power Engineering, Inc., Žilina
- ABB s.r.o., Bratislava
- Research Institute of Nuclear Power Plants, Inc. (VUJE, a.s.), Trnava
- ELEKTROVOD, Inc. Bratislava
- Slovak Gas Industry, Division Slovtransgaz, Nitra
- U.S. Steel, Košice
- Siemens Ltd., Bratislava

6.1.1. Visitors to the Department

- prof. Ing. Jaan Järvik – Tallinn Technical University, Estonia
- Dr. Ing. Janusz Sowiński – Polytechnika Częstochowska, Poland
- Ing. Petr Mastný, PhD. – Brno University of Technology, Czech Republic
- Ing. Jiří Drápela, PhD. – Brno University of Technology, Czech Republic
- doc. d.t.n. Ing. Nikolay Džagarov – Technical University Varna, Bulgaria
- Ing. Georgi Georgiev, PhD. – Technical University Varna, Bulgaria
- gl. as. dp. Ing. Zhivko Grozdev – Technical University Varna, Bulgaria

6.2. International Co-operation

- Moscow Power Engineering Institute, Russia
- Sankt - Petersburg Power Education Institute of Power Engineering, State Department of Russian Federation, Russia
- Brunel University, London
- Graz University of Technology, Austria
- Polytechnika Częstochowska, Poland
- Akademia Górniczo - Hutnicza, Krakow, Poland
- Technical University of Riga, Latvia
- Technical University of Tallinn, Estonia
- Hungarian Copper Promotion Centre Budapest, Hungary
- Haefely Test A.G. TETTEX Instruments Division, Dietikon Zürich, Switzerland
- University of Oradea, Romania
- West Bohemian University, Pilsen, Czech Republic
- VŠB Technical University, Ostrava, Czech Republic
- Czech Technical University, Prague, Czech Republic
- Brno University of Technology, Czech Republic
- Budapest Polytechnic, Kálmán Kandó, Budapest, Hungary
- EUSS Universitat Autònoma de Barcelona, Spain
- Technical University, Varna, Bulgaria
- ABB Switzerland Ltd, Switzerland

6.2.1. Visits of Staff Members to Foreign Institutions

- Kolcun, M.: ČVUT Prague, Czech Republic, 27.–28.1.2009
- Lizák, F.: ČVUT Prague, Czech Republic, 28.–29.4.2009
- Varga, L.: VŠB TU, Ostrava, Czech Republic, 27.–30.4.2009
- Balogh, J.: VŠB TU, Ostrava, Czech Republic, 27.–30.4.2009
- Ilenin, S.: VŠB TU, Ostrava, Czech Republic, 27.–30.4.2009
- Kolcun, M.: TU Tallinn, Estonia, 4.–7.5.2009
- Hlubeň, D.: TU Tallinn, Estonia, 4.–7.5.2009
- Kolcun, M.: VŠB TU, Ostrava, Czech Republic, 12.–14.5.2009
- Beňa, L.: VŠB TU, Ostrava, Czech Republic, 12.–14.5.2009
- Hlubeň, D.: VŠB TU, Ostrava, Czech Republic, 12.–14.5.2009
- Rusnák, J.: VŠB TU, Ostrava, Czech Republic, 12.–14.5.2009
- Kolcunová, I.: VŠB TU, Ostrava, Czech Republic, 25.–26.5.2009
- Medveď, D.: WBU, Pilsen, Czech Republic, 25.–29.5.2009
- Semančík, P.: WBU, Pilsen, Czech Republic, 25.–29.5.2009
- Lizák, F.: WBU, Pilsen, Czech Republic, 25.–29.5.2009
- Čačková, V.: WBU, Pilsen, Czech Republic, 25.–29.5.2009
- Dedinská, L.: WBU, Pilsen, Czech Republic, 25.–29.5.2009
- Kvakovský, M.: WBU, Pilsen, Czech Republic, 25.–29.5.2009
- Kolcun, M.: Politechnika Częstochowska, Poland, 23.–24.5.2009
- Medveď, D.: Riga Technical University, Riga, Latvia, 8.–12.6.2009
- Hvizdoš, M.: Riga Technical University, Riga, Latvia, 8.–12.6.2009
- Kolcun, M.: VŠB TU, Ostrava, Czech Republic, 2.6.2009
- Kolcun, M.: ČVUT Prague, Czech Republic, 8.–11.6.2009
- Hlubeň, D.: TU Varna, Bulgaria, 1.–11.7.2009

- Beňa, Ľ.: TU Varna, Bulgaria, 1.–11.7.2009
- Kolcunová I.: TU Graz, Austria, 4.–10.7.2009
- Kolcun, M.: Genoa, Italy, 7.–11.9.2009
- Kolcunová, I.: Genoa, Italy, 7.–11.9.2009
- Cimbala, R.: Genoa, Italy, 7.–11.9.2009
- Kolcun, M.: Reykjavik, Iceland, 16.–18.9.2009
- Kolcunová, I.: Reykjavik, Iceland, 16.–18.9.2009
- Marton, K.: WBU, Pilsen, Czech Republic, 9.–11.9.2009
- Tkáč, J.: Brno University of Technology, Czech Republic, 6.–12.9.2009
- Beňa, Ľ.: VŠB TU, Ostrava, Czech Republic, 15.–16.9.2009
- Kolcunová, I.: ČVUT Prague, Czech Republic, 20.10.2009
- Rusnák, J.: Tábor, Czech Republic, 9.–11.11.2009
- Kolcun, M.: Politechnika Częstochowska, Poland, 29.11.–1.12.2009
- Marton, K.: Brno University of Technology, Czech Republic, 9.12.2009

6.3. Membership in International Organizations and Societies

- Cimbala, R.: Working Group: Insulation Diagnostics, Manchester, United Kingdom
- Cimbala, R.: Working Group „Static Electricity in Process Industry“, Basel, Switzerland
- Cimbala, R.: Institute of Electrical and Electronic Engineers (IEEE), Dielectric and Electrical Insulation Society, USA
- Cimbala, R.: Member of CIGRE Committee, France
- Kolcun, M.: Member of Czech and Slovak National CIGRE Committee
- Kolcun, M.: Member of Czech Committee CIREĐ
- Kolcun, M.: Member of Slovak WEC Committee
- Kolcun, M.: Member of Editorial Board Journal of Elektrotechnika v praxi, Czech Republic
- Kolcun, M.: Member of Editorial Board Power and Electrical Engineering, Riga, Latvia
- Kolcun, M.: Honorary Professor of Budapest Tech, Hungary
- Marton, K.: Working Group: Insulation Diagnostics, Manchester, United Kingdom
- Marton, K.: Member of Electrotechnical Society, WG Electrostatics, Prague, Czech Republic
- Marton, K.: Invited professor, Fakultatea Electrotehnica si Informatica - University din Oradea, Romania
- Tkáč, J.: Member of International Solar Energy Society, Germany
- Balogh, J.: Member of Scientific Board EEA - Electrotehnica Electronica Automatica, Romania
- Cimbala, R.: Member of Scientific Board EEA - Electrotehnica Electronica Automatica, Romania
- Džmura, J.: Member of Scientific Board EEA - Electrotehnica Electronica Automatica, Romania
- Petráš, J.: Member of Scientific Board EEA - Electrotehnica Electronica Automatica, Romania

6.4. Membership in Slovak Organizations and Societies

- Cimbala, R.: Member of Technical Standardization Commission of Slovak

- Republic - Cables and Electroinsulation Materials, TK No. 53
- Cimbala, R.: Member of WG Electrical Machine Diagnostics, US Steel Košice
 - Cimbala, R.: Member of Scientific Council, TU FEI Košice
 - Cimbala, R.: Member of Editorial Board JSES – Starnutie elektroizolačných systémov, Košice
 - Cimbala, R.: Member of Editorial Board EEN – Elektroenergetika, TU Košice, FEI
 - Dolník, B.: Member of Editorial Board JSES – Starnutie elektroizolačných systémov, Košice
 - Hlubeň, D.: Member of Examination Commission of Slovak Council of Civil Engineers According to Law: No. 555/2005 Statute of Slovakia
 - Hlubeň, D.: Member of SEZ-KES
 - Kolcun, M.: Member of Editorial Board Journal of EE
 - Kolcun, M.: Member of Editorial board journal Acta Electrotechnica et Informatica
 - Kolcun, M.: Member of Examinational Commission According to Law: No. 70/1998 Statute of Slovakia
 - Kolcun, M.: Member of Scientific Council, TU FEI Košice
 - Kolcun, K.: Chairman of Editorial Board JSES – Starnutie elektroizolačných systémov, Košice
 - Kolcun, K.: Chairman of Editorial Board EEN – Elektroenergetika, TU Košice, FEI
 - Kolcunová, I.: Association of Technical Diagnostics
 - Kolcunová, I.: Slovak Centre of IEE
 - Kolcunová, I.: Member of Technical Standardization Commission of Slovak Republic - Cables and Electro-insulation Materials, TK No. 53
 - Kolcunová, I.: Member of WG for Electrical Machine Diagnostics, US Steel Košice
 - Kolcunová, I.: Member of Editorial Board JSES – Starnutie elektroizolačných systémov, Košice
 - Kolcunová, I.: Member of Editorial Board EEN – Elektroenergetika, TU Košice, FEI
 - Kurimský, J.: Member of WG for Electrical Machine Diagnostics, US Steel Košice
 - Kurimský, J.: Executive Editor of EEN – Elektroenergetika, TU Košice, FEI
 - Marton, K.: Editorial Board of Journal of Electrical Engineering, Bratislava
 - Marton, K.: Member of Scientific Council, Faculty of Electrical Engineering, University of Žilina
 - Marton, K.: Chairman of Society for Sciences and Arts, TU FEI Košice
 - Marton, K.: Chairman of Commission of SKVH by MŠK SR for DrSc. (Electric Power Engineering), Bratislava
 - Marton, K.: Member of Commission of SKVH by MŠK SR for PhD. (Electric Power Engineering), Bratislava
 - Marton, K.: Honorary Chairman Member of Slovak Electrotechnical Society, TU FEI Košice
 - Marton, K.: Member of Editorial Board JSES – Starnutie elektroizolačných systémov, Košice
 - Marton, K.: Member of Editorial Board EEN – Elektroenergetika, TU Košice, FEI

- Novák, P.: Chairman of Examinational Commission According to Law: No. 70/1998 Statute of Slovakia
- Varga, L.: Chairman of Examinational Commission According to Law: No. 70/1998 Statute of Slovakia
- Varga, L.: Member of Technical Standardization Commission of Slovak Republic – Electrical Power Engineering, TK No.43
- Varga, L.: Member of Technical Standardization Commission of Slovak Republic – Electrical Installations and Protection against Electric Shock, TK No.84
- Varga, L.: Chairman of Senate for Granting Professional Qualification for Business Activity in Power Engineering, URSO
- Varga, L.: Member of Examination Commission of Slovak Council of Civil Engineers According to Law: No. 555/2005 Statute of Slovakia
- Balogh, J.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Beňa, L.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Cimbala, R.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Džmura, J.: Chairman of Slovak Electrotechnical Society, TU FEI Košice
- Hlubeň, D.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Hvizdoš, M.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Kolcun, M.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Kolcunová, I.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Medved', D.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Mészáros, A.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Petráš, J.: Member of Slovak Electrotechnical Society, TU FEI Košice
- Rusnák, J.: Member of Slovak Electrotechnical Society, TU FEI Košice

6.5. Contracts, International Scientific Projects

Intensive Program SOCRATES-ERASMUS: *Environmental Impacts of Power Industry 2008* (Coordinator: prof. Ing. Jan Mühlbacher, CSc. Technical University, ZČU Pilsen, guarantee for department: prof. Ing. Michal Kolcun, Ph.D.)

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	41	30	6

8 OTHER ACTIVITIES

8.1. Conferences, Seminars

- SeS2009 - Scientific Seminar on Electric Insulation Aging. 26.–27.3.2009, Tatranská Štrba - High Tatras, Slovak Republic.
- Organising of ELEKTROENERGETIKA 2009 - the 5th International Scientific Symposium, 23.9. – 25.9.2009, High Tatras – Stará Lesná, Slovak Republic.
- Specialized Seminar: The Future of Slovak Electrical Engineering, 5.-6.11.2009, Šarpanec - High Tatras, Slovak Republic.

8.2. Expert References

- Kolcun, M.: Opinion of Assoc. Prof. Thesis by Ing. Ladislav Rudolf, PhD., VŠB TU Ostrava, Czech Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing. Peter Bojda, EF ŽU Žilina, Slovak Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing. Martin Galetka, VŠB TU Ostrava, Czech Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing. Peter Girovský, FEI TU Košice, Slovak Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing. Rastislav Šmidovič, EF ŽU Žilina, Slovak Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing Břetislav Stacho, VŠB TU Ostrava, Czech Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing. Jan Švec, ČVUT Praha, Czech Republic.
- Kolcun, M.: Opinion of PhD Thesis by Ing. Josef Zetka, ČVUT Praha, Czech Republic.
- Kolcunová. I.: Opinion of Assoc. Prof. Thesis by Ing. Stanislav Mišák, PhD., VŠB TU Ostrava, Czech Republic.
- Kolcunová. I.: Opinion of PhD Thesis by Ing. Lenka Karasová, ČVUT Praha, Czech Republic.
- Kolcunová. I.: Opinion of PhD Thesis by Ing. Lukáš Potáček, VUT Brno, Czech Republic.
- Marton, K.: Opinion of Prof. Thesis by doc. Ing. Ľubomír Jahnátek, CSc., FEI TU Košice, Slovak Republic.
- Marton, K.: Opinion of DrSc. Thesis by Ing. Ján Kuzmík, CSc., EÚ SAV Bratislava, Slovak Republic.
- Marton, K.: Opinion of PhD Thesis by Ing. Ľubomír Turanský, FEI STU Bratislava, Slovak Republic.

8.3. Projects for Industry Companies

- Cimbala, R.: Measurement of Long Term of Epoxy Sampers, ABB Switzerland Ltd., Baden-Dättwil, 2009, Switzerland
- Cimbala, R.: Partial Discharges Measurement, Eustream, s.r.o., 2009, Slovak Republic
- Cimbala, R.: Diagnostic and Measurement, SPP Bratislava, 2009, Slovak Republic
- Cimbala, R.: Insulating Condition Diagnostic and Calibration, U.S. Steel s.r.o., Košice, 2009, Slovak Republic
- Cimbala, R.: Diagnostic of Electrical Testers, Inžinierske stavby Košice, 2009, Slovak Republic
- Cimbala, R.: Tests of Electrical Breakdown, Perlon, s.r.o. Košice, 2009, Slovak Republic
- Kolcun, M.: Advertising at Conference Elektroenergetika '09, RWE Germany, SE, a.s. Bratislava, 2009, Slovak Republic
- Kolcun, M.: Technical Consultancy, Slovenské elektrárne, a.s. Bratislava, 2009, Slovak Republic
- Kolcun, M.: Study, Východoslovenská distribučná, a.s. Košice, 2009, Slovak Republic

- Kolcun, M.: Analysis, Východoslovenská distribučná, a.s. Košice, 2009, Slovak Republic
- Kolcun, M.: Study of Connectivity, Východoslovenská energetika, a.s. Košice, 2009, Slovak Republic
- Kolcun, M.: Project, Východoslovenská energetika, a.s. Košice, 2009, Slovak Republic

8.4. Compositions for Dissertation Examinations

- Frak, P.: The reliability and maintenance strategy in distribution grid. (Kolcun, M.)

9 PUBLICATIONS

9.1 Books

- [1] KOLCUN, M., KURIMSKÝ, J.: Elektroenergetika 2009. Proceedings of the fifth international scientific symposium: September 23 - 25, 2009, Stará Lesná, Slovakia. 1. vyd. Košice: TU, 2009. 465 s. ISBN 978-80-553-0237-9.
- [2] KOLCUN, M.: Electric Power System Operation Control. In: Efektywnosc w sektorze dystrybucji energii elektrycznej: Aspekty techniczne. Wydawnictwo Tekst sp. z o. o., Bydgoszcz. 2009. 113 - 134. ISBN 978-83-7208-022-6.

9.2 Textbooks

- [1] MÉSZÁROS, A.: Electrotechnics and Environmental Problems. 2. dopl. vyd. Košice: FEI TU, 2009. 305 s. ISBN 978-80-553-0175-4.

9.3 Journals

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- [2] BERNÁTOVÁ, R., BERNÁT, M., CIMBALA, R.: On Increasing Efficiency in Teaching Technical and Natural Sciences by Means of Java Applets 2 (Experimental Research). In: JTIE - Journal of Technology and Information Education. vol. 1, no.1 (2009), p. 62-69. Internet: <http://www.jtie.upol.cz/clanky_1_2009/bernatova2.pdf>. ISSN 1803-6805.
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9.4 Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	11	33	6



EXPERT'S ACTIVITY FOR PRACTICE

of Department of Electric Power Engineering

Diagnostic of High Voltage Power Devices

- diagnostic measurements of insulating systems of high voltage rotating machines by DC methods
- diagnostic measurements of insulating systems of high voltage rotating machines by partial discharge measurements and phase-resolved partial discharge analysis
- DC diagnostics of high voltage cables, bushes and cable terminators
- diagnostics of high voltage transformers
- localisation of PD sources on high voltage devices by means of high-frequency detection
- advising activities

Special Measurement in Electric Power Engineering

- measurement of electric power lines parameters (positive sequence impedance, zero sequence impedance, inductance and capacitance)
- measurement of power device grounding (appraisal of grounding system quality from the aspect of impedance, system integrity and magnitude of contact voltage and step voltage)
- measurement of basic power quality indices
- design and review of relays operation

Expertise and judge activity in electric power engineering focused on:

- Appraisal of extensive earthing systems quality on the basis of:
 - measurement of the impedance,
 - measurement of the touch voltage and step voltage,
 - measurement of the wholeness.
- Determination of overhead transmission line parameters and cable parameters, namely
 - measurement of the line impedance Z (positive sequence, negative sequence and zero sequence components),
 - measurement of the line capacitance,
 - measurement of the mutual reactance (X_{0m}).
- Measurement of the earth impedance of overhead line towers (without disconnecting earthing conductor),
- Inspection of the electrical equipments and appliances.
- Designing in electrical engineering.

DEPARTMENT OF ELECTRONICS AND MULTIMEDIA COMMUNICATIONS

<http://www.kemt.fei.tuke.sk/>

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Head of Department:
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E-mail: Dusan.Levicky@tuke.sk

Department Of
Electronics
& Multimedia Communications



1 DEPARTMENT'S PROFILE

The Department of Electronics and Multimedia Communications was founded in 1969. The original name of department was Department of Electronics. The Department offers three types of full-time courses:

Bachelor's Degree course lasts in normal way 3 years and is leading to degree Bc. The graduates get more-or-less practical skills in mastering

- Automotive electronics,
- Electronics,
- Telecommunications.

Master's Degree course lasts in normal way 2 years and is leading to degree Ing. The graduates get theoretical and practical skills in specialization:

- Infoelectronics,
- Multimedia telecommunications.



Doctoral Study course lasts in normal way 3 years and is leading to degree PhD. The graduates get erudition in scientific areas

- Infoelectronics,
- Telecommunications,
- Measurement Techniques.

The subjects in the degree courses are orientated to the linear and non-linear analogue circuits, automotive electronics and diagnostic of cars, digital electronics, microwave technology, optoelectronics, signal and systems, acoustics, digital signal processing, digital filtering, signal processors and microcontrollers, electronic measurement systems, television systems, signal recording, digital communication and digital transmission systems, optoelectronic communication systems, photonics, sensor systems, multimedia communication systems, mobile and satellite communication systems, digital image communication systems and medical electronics.

The basic research activities of Department are concentrated on digital image and speech processing, multimedia communications, digital filtering, optoelectronics and optical communication, A/D convertors modelling and testing.

2 **STAFF**

Professors: Dr.h.c. prof. Ing. Anton Čižmár, CSc.
prof. Ing. Dušan Kocur, CSc.
prof. Ing. Dušan Levický, CSc.
prof. Ing. Stanislav Marchevský, CSc.
prof. Ing. Linus Michaeli, DrSc.
prof. Ing. Ján Mihalík, CSc.
Dr.h.c. prof. RNDr. Ing. Ján Turán, DrSc.

Professors emeritus: prof. Ing. Viktor Špány, DrSc.

Associate Professors: doc. Ing. Ľubomír Doboš, CSc.
doc. Ing. Miloš Drutarovský, CSc.
doc. Ing. Pavol Galajda, CSc.
doc. Ing. Ján Gamec, CSc. (from 19.03.2009)
doc. Ing. Jozef Juhár, CSc.
doc. Ing. Ľuboš Ovseník, PhD.
doc. Ing. Ján Šaliga, CSc.

Assistant Professors: Ing. Mária Gamcová, PhD.
Ing. Iveta Gladišová, CSc.
Ing. Ľudmila Maceková, PhD.
Ing. Stanislav Ondáš, PhD.
Ing. Radovan Ridzoň, PhD.
Mgr. Mária Švecová, PhD.
Ing. Zita Klenovičová, CSc.
Ing. Jozef Zavacký, CSc.

Research Assistant: Ing. Michal Mirilovič, PhD. Ing. Matúš Pleva
Mgr. Jana Rovňáková, PhD. Ing. Ján Papaj

Support staff: Mgr. Viktória Lovacká Milan Peška
Božena Marchevská Viera Šumáková

Ph.D. students:

Internal form: Ing. Vladimír Bánoci Ing. Martin Sekerák
Ing. Radovan Blička Ing. Ján Staš
Ing. Gabriel Bugár Ing. Ján Šterba
Ing. Vladimír Cipov Ing. Daniel Urdzík
Ing. Milan Čík Ing. Michal Varchola
Ing. Marián Chovanec Ing. Peter Vízlay
Ing. Peter Drotár Ing. Eva Vozáriková
Ing. Martin Fifik Ing. Juraj Gazda

External form: Ing. Sakhia Darjan Ing. Peter Goč-Matis
Ing. Daniel Fábry Ing. Branislav Hrušovský
Ing. Ľubomír Horniak Ing. Tomáš Kanócz
Ing. Miroslav Katrák Ing. Pavol Kocan
Ing. Rastislav Kokoška Ing. Anna Kolesárová
Ing. Henrieta Palubová Ing. Martin Liptaj
Ing. Peter Patlevič Ing. Martin Lojka
Ing. Milan Rusko Ing. Lenka Macková
Ing. Péter Szoboszlai Ing. Pavol Mišenčík
Ing. Kamil Šindlery Ing. Ján Mochnáč
Ing. Peter Želinský Ing. Marek Papco

3 LABORATORIES

3.1. Teaching and Research Laboratories

- Laboratory of Multimedia Communications
- Laboratory of Digital Signal Processing and Satellite Communications
- Laboratory of Digital Image Processing and Videocommunication
- Laboratory of Optoelectronic Communications
- Laboratory of Electronic Circuits & Measurement

3.2. Special Laboratories

- Laboratory of measurement
- Laboratory of communication technologies and advanced digital signal processing
- Laboratory of optoelectronics
- Laboratory of multimedia and network security
- Laboratory of speech technologies in telecommunications

4 TEACHING

4.1. Undergraduate Study (Bc.) – Automotive Electronics

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Basics of electronics	2 nd	3/2	Micheali
Circuit theory	3 rd	3/2	Kocur
Signals and systems	3 rd	3/2	Mihalík, Zavacký
Digital electronics	3 rd	3/3	Levický
Programming environments for electronics and communications	3 rd	1/2	Drutarovský, Šaliga
Electronic measurement systems	4 th	2/2	Šaliga
Electroacoustics	4 th	2/2	Juhár
CAD in electronics	4 th	2/2	Galajda
Microelectronic circuits	4 th	3/2	Michaeli
Electromagnetic waves and antennas	4 th	2/2	Ovseník
Sensor networks	5 th	2/2	Kocur
Semestral projects	5 th	0/6	Galajda
Automotive electronics	5 th	2/2	Gamec
Microprocessor technology	5 th	2/2	Drutarovský
High frequency and microwave technology	5 th	2/2	Gamec
Videocommunications	5 th	2/2	Mihalík
Bachelor work	6 th	0/9	Galajda
Automotive embedded systems	6 th	3/2	Drutarovský
Active and passive safety systems	6 th	3/2	Gamec
Optoelectronic systems	6 th	2/2	Turán
Smart measurement systems	6 th	2/2	Šaliga
Satellite technology and services	6 th	3/2	Marchevský
Mobile networks and services	6 th	3/2	Doboš

4.2. Undergraduate Study (Bc.) – Electronics

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Basics of electronics	2 nd	3/2	Micheali
Circuit theory	3 rd	3/2	Kocur
Signals and systems	3 rd	3/2	Mihalík, Zavacký
Digital electronics	3 rd	3/3	Levický
Programming environments for electronics and communications	3 rd	1/2	Drutarovský, Šaliga
Electronic measurement systems	4 th	2/2	Šaliga
Microelectronic circuits	4 th	3/2	Michaeli
Electroacoustics	4 th	2/2	Juhár
Electromagnetic waves and antennas	4 th	2/2	Ovseník
CAD in electronics	4 th	2/2	Galajda
High frequency and microwave technology	5 th	2/2	Gamec
Semestral projects	5 th	0/6	Galajda
Microprocessors technology	5 th	2/2	Drutarovský
Videocommunications	5 th	2/2	Mihalík

Automotive electronics	5 th	2/2	Gamec
FPGA circuits	5 th	2/2	Drutarovský, Galajda
Bachelor work	6 th	0/9	Galajda
Optoelectronic systems	6 th	2/2	Turán
Smart measurement systems	6 th	2/2	Šaliga
Mobile networks and services	6 th	3/2	Doboš
Satellite technology and services	6 th	3/2	Marchevský
Active and passive safety systems	6 th	3/2	Gamec

4.3. Undergraduate Study (Bc.) – Telecommunications

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Basics of electronics	2 nd	3/2	Micheali
Circuit theory	3 rd	3/2	Kocur
Signals and systems	3 rd	3/2	Mihalík, Zavacký
Digital electronics	3 rd	3/3	Levický
Programming environments for electronics and communications	3 rd	1/2	Drutarovský, Šaliga
Electronic measurement systems	4 th	2/2	Šaliga
Electromagnetic waves and antennas	4 th	2/2	Ovseník
Introduction to telecommunication	4 th	3/2	Levický
Electroacoustics	4 th	2/2	Juhár
Semestral projects	5 th	0/6	Galajda
Switching technology	5 th	3/2	Marchevský
Networks architecture	5 th	3/2	Čížmár
Access networks	5 th	3/2	Marchevský, Maceková
High frequency and microwave technology	5 th	2/2	Gamec
Microprocessor technology	5 th	2/2	Drutarovský
Videocommunications	5 th	2/2	Mihalík
FPGA circuits	5 th	2/2	Drutarovský, Galajda
Mobile networks and services	6 th	3/2	Doboš
Bachelor work	6 th	0/9	Galajda
Satellite technology and services	6 th	3/2	Marchevský
Network security	6 th	2/2	Levický
Optoelectronic systems	6 th	2/2	Turán
Smart measurement systems	6 th	2/2	Šaliga

4.4. Graduate Study (Ing.) – Infoelectronics

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Digital signal processing	1 st	3/2	Mihalík
Programmable logic Devices	1 st	2/2	Drutarovský, Galajda
Optoelectronics	1 st	2/2	Turán
Signal processors	1 st	3/2	Drutarovský
Semestral projects	2 nd	0/4	Galajda
Microwave circuits and systems	2 nd	3/2	Gamec
Digital image processing and coding	2 nd	3/2	Mihalík

Processing and transmission of speech and audio	2 nd	3/2	Juhár
Optical communication systems	2 nd	3/2	Turán
Digital filters	2 nd	2/2	Kocur
Applied cryptography	2 nd	3/2	Levický
Digital television	3 rd	3/2	Marchevský
Photonics	3 rd	3/2	Turán
Multimedia technologies	3 rd	3/2	Levický
Master thesis	3 rd	0/6	Galajda
Vehicle diagnostics systems	3 rd	3/2	Galajda
Medical electronics	3 rd	3/2	Michaeli
Mobile communications	3 rd	3/2	Doboš
Satellite communications	3 rd	3/2	Marchevský
Multimedia database	3 rd	3/2	Juhár
Project management	4 th	0/2	Marchevský
Master thesis	4 th	0/18	Galajda

4.5. Graduate Study (Ing.) – Multimedia Telecommunications

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Digital signal processing	1 th	3/2	Mihalík
Optoelectronics	1 th	2/2	Turán
Communication channel modelling	1 th	2/2	Kocur
Spread-spectrum communication systems	2 nd	3/2	Kocur
Semestral projects	2 nd	0/4	Galajda
Communications systems theory	2 nd	3/2	Čížmár
NGN networks	2 nd	3/2	Doboš
Optical communication systems	2 nd	3/2	Turán
Processing and transmission of speech and audio	2 nd	3/2	Juhár
Digital filters	2 nd	2/2	Kocur
Applied cryptography	2 nd	3/2	Levický
Multimedia technologies	3 rd	3/2	Levický
Mobile communications	3 rd	3/2	Doboš
Satellite communications	3 rd	3/2	Marchevský
Master thesis	3 rd	0/6	Galajda
Photonics	3 rd	3/2	Turán
Digital television	3 rd	3/2	Marchevský
Interactive telecommunication systems and services	3 rd	3/2	Juhár
Multimedia database	3 rd	2/2	Juhár
Project management	4 th	0/2	Marchevský
Master thesis	4 th	0/18	Galajda

4.6. Postgraduate Study (PhD.) –Telecommunications

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Communication system theory	1 th	0/2	
Foreign language	1 th	0/2	
Research project I.	1 th	0/2	
Foreign language	2 nd	0/2	
Advanced communication technology	2 nd	0/2	

Research project II.	2 nd	0/2	
Specialization subject	3 rd	0/2	
Research work	3 rd	0/8	
Research project III.	3 rd	0/4	
Research work	4 th	0/8	
Research project IV.	4 th	0/2	
Research work	5 th	0/12	
Research project V.	5 th	0/2	
Thesis - Research work	6 th	0/9	

4.7. Postgraduate Study (PhD.) – Infoelectronics

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Theory of infoelectronics	1 th	0/2	
Foreign language	1 th	0/2	
Research project I.	1 th	0/2	
Foreign language	2 nd	0/2	
Infoelectronics systems	2 nd	0/2	
Research project II.	2 nd	0/2	
Specialization subject	3 rd	0/2	
Research work	3 rd	0/8	
Research project III.	3 rd	0/4	
Research work	4 th	0/8	
Research project IV.	4 th	0/2	
Research work	5 th	0/12	
Research project V.	5 th	0/2	
Thesis - Research work	6 th	0/9	

4.8. Postgraduate Study (PhD.) – Measurement Technique

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Topics from mathematics and physics	1 th	0/2	
Foreign language	1 th	0/2	
Research project I.	1 th	0/2	
Foreign language	2 nd	0/2	
Measure theory	2 nd	0/2	
Research project II.	2 nd	0/2	
Specialization subject	3 rd	0/2	
Research work	3 rd	0/8	
Research project III.	3 rd	0/4	
Research work	4 th	0/8	
Research project IV.	4 th	0/2	
Research work	5 th	0/12	
Research project V.	5 th	0/2	
Thesis - Research work	5 th	0/9	

5 RESEARCH PROJECTS

- Cross-Modal Analysis of Audio and Video Signals (COST Action 2102)
- Pervasive Mobile & Ambient Wireless Communications (COST Action 2100)
- High Altitude Platforms (HAPs) for Communications and Other Services

(COST Action 297)

- RF/Microwave Communication Subsystems for Emerging Wireless Technologies (COST Action IC0803)
- Propagation Tools and Data for Integrated Telecommunication, Navigation and Earth Observation Systems (COST Action IC0802)
- Innovation Transfer Network (Leonardo da Vinci LLP-LDV/TOI/08/IT/493)
- Metrological Characterisation of the ADConverters “ADCWAN” (MIUR Italy call: D. M. 5.8.2004, n. 262 – Programmazione del sistema universitario)
- INDECT – Intelligent Information System Supporting Observation, Searching and Detection for Security of Citizens in Urban Environment (7.FP, Contract No 218086)
- Ultra Wideband Radio Application for Localisation of Hidden People and Detection of Unauthorised Objects (6.FP, Contract No 032744)
- Remote Laboratory for Experimental Testing of Complex Reconfigurable Systems/Circuits based on FPGA Circuits (KEGA project, No. 3/5238/07)
- Development of Measurement Apparatus and Multimedia e-Learning Book Supporting Education in the Field of UWB Sensor Networks (KEGA project, No. 3/7523/09)
- WEBLAB - Exploitation of WEB Technologies for Electronic Courses Requiring Laboratory Exercises (KEGA project, No. 3/7115/09)
- Through Wall Tracking of Moving Targets by Using UWB Radar Systems (Project of Agency for Science and Research, No. APVV LPP-0080-09)
- Digital Signal Processing for Target Detection and Tracking in UWB Radars (Project of Agency for Science and Research, No. APVV LPP-0287)
- Speech Technologies for Advanced Telecommunication and Information Systems and Services in Slovak Language (Project of Agency for Science and Research, No. APVV-0369-07)
- Intelligent Control of Service Robot (Project of Agency for Science and Research, No. APVV VMSP-P-0004-09)
- Center of Information and Communication Technologies for Knowledge Systems (Operational Program Research and Development, Call OPVaV-2008/2.1/01-SORO, No. IMTS-26220120020)
- Multimedia Communication Security (Scientific Grant Agency Project VEGA, No. 1/4054/07)
- Reconfigurable Platforms for Wireless Communication Networks (Scientific Grant Agency Project VEGA, No. 1/4088/07)
- Metrological Characterisation of the Analog to Digital Interfaces and Improvement of its Properties (Scientific Grant Agency Project VEGA, No. 1/0103/08)

6 **CO-OPERATION**

6.1. **Co-operation in Slovakia**

- Slovak Telecom
- VSE, Košice
- Volkswagen Slovakia a.s.
- Slovak Academy of Science
- Ingmetal s.r.o., Prešov
- Contineo s.r.o., Košice
- Elcom s.r.o., Prešov

6.1.1. Visitors to the Department

- Prof. Viktor Fischer, Universite Jean Monnet- Saint-Etienne, France, April 14-17, 2009
- Prof. Peter Husar, Technische Universität Ilmenau, Germany, May 11, 2009
- Ing. Martin Kmec, Technische Universität Ilmenau, Germany, March 23-27, 2009

6.2. International Co-operation

- MEDAV GmbH, Germany
- Meodat Meßtechnik, Germany
- Ingenieur Büro Ralf Klukas, Germany
- Crabbe Consulting Ltd, Germany
- INESC Lisabon, Portugal
- IMEC, Netherlands
- Statens Rådningsverk, Sweden
- ŠkodaAuto Mladá Boleslav, Czech Republic
- Geozondas Ltd., Lithuania
- Vrije Universiteit Brussel, Belgium
- Technische Universität Ilmenau, Germany
- Hamburg University of Technology, Germany
- Technische Universiteit Delft, Netherlands
- Universitat Ramon Llull, Barcelona, Spain
- Technical University Budapest, Hungary
- Technical University of Ljubljana, Slovenia
- Technical University of Clju-Napoca, Romania
- University of Firenze, Italy
- University of Gent
- University of Maribor, Slovenia
- University of Sannio, Italy
- University of Reggio Di Calabria, Italy
- University of Mediteranea, Italy
- University of Bologna, Italy
- Universite Jean Monnet-Saint-Etienne, France
- University of Gävle, Sweden

6.2.1. Visit of Staff Members to Foreign Institutions

- Bugár,G., Ramon Llull University, Barcelona, Spain March 10-15, 2009
- Bugár,G., Univ. of Technology Brno, Czech Republic May 5-6, 2009
- Bugár,G., HIQ, University of Gävle, Sweden June 22 - July 3, 2009
- Bánoci,V., HIQ, University of Gävle, Sweden June 22 - July 3, 2009
- Doboš, L., University of Krakow, Poland January 21-24, 2009
- Doboš, L., University of Gdansk, Poland April 15-17, 2009
- Doboš, L., University of Oradea, Romania May 27-29, 2009
- Doboš, L., University Reggio di Calabria, Italy July 5–9, 2009
- Doboš, L., Univ. of Naples Federico, Genoa, Italy September 6-13, 2009
- Doboš, L., TU of Wien, Austria September 27-30, 2009
- Drotár,P., Ramon Llull University, Barcelona, Spain Feb. 2 - April 23, 2009

- Drotár,P., Hamburg University of Technology, Germany May 25 - June 19, 2009
- Drotár,P., Hamburg University of Technology, Germany September 1-4, 2009
- Drotár,P., Pégase Aerospace Competitiveness Cluster, Avignon, France October 19-22, 2009
- Drutarovský,M., École Polytechnique Fédérale de Lausanne, Switzerland January 7-10, 2009
- Drutarovský,M., Università di Bologna, Italy February 9-12, 2009
- Drutarovský,M., Delft University, Delft, The Netherlands March 4-8, 2009
- Drutarovský,M., IMEC, Eindhoven, The Netherlands April 1-4, 2009
- Drutarovský,M., Università di Bologna, Italy May 5-8, 2009
- Drutarovský,M., Università di Bologna, Italy May 24- 26, 2009
- Drutarovský,M., EC, Brussels, Belgium June 3-5, 2009
- Drutarovský,M., ČVUT Prague, Czech Republic June 23-28, 2009
- Drutarovský,M., Università di Bologna, Italy July 27-30, 2009
- Drutarovský,M., ČVUT Prague, Czech Republic Aug. 30 – Sep. 3, 2009
- Drutarovský,M., TU of Ilmenau, Germany September 6–9, 2009
- Galajda,P., TRIALOG, Paris, France February 24-27, 2009
- Galajda,P., Embedded World Norimberg, Germany March 3-5, 2009
- Galajda,P., National University of Ireland, Galway March 30 - April 2, 2009
- Galajda,P., Univ. of Technology Brno, Czech Republic May 5-6, 2009
- Galajda,P., TU of Ilmenau, Germany September 6–9, 2009
- Galajda,P., Pégase Aerospace Competitiveness Cluster, Avignon, France October 19-22, 2009
- Galajda,P., University of Peloponnese, Tripolis, Greece October 7–11, 2009
- Gamcová, M., Univ. of Naples Federico, Genoa, Italy September 6-13, 2009
- Gamec, M., Univ. of Naples Federico, Genoa, Italy September 6-13, 2009
- Gazda,J., Ramon Llull University, Barcelona, Spain Feb. 2 - April 23, 2009
- Gazda,J., Univ. of Technology Brno, Czech Republic May 5-6, 2009
- Gazda,J., Hamburg University of Technology, Germany May 25 - June 19, 2009
- Gazda,J., Hamburg University of Technology, Germany September 1-4, 2009
- Gazda,J., University of Peloponnese, Tripolis, Greece October 7–11, 2009
- Juhár,J., GmbH Berlin, Germany March 18-22, 2009
- Juhár,J., Trinity College Dublin, Ireland March 22-27, 2009
- Juhár,J., University of Gdansk, Poland April 15-17, 2009
- Juhár,J., ČVUT Prague, Czech Republic April 27-28, 2009
- Juhár,J., University of Oradea, Romania May 27-29, 2009
- Kanócz,T., University of Oradea, Romania May 21-24, 2009
- Kanócz,T., Univ. of Technology Brno, Czech Republic June 18-21, 2009
- Kanócz,T., Univ. of Technology Brno, Czech Republic June 23-28, 2009
- Kanócz,T., ČVUT Prague, Czech Republic September 1-5, 2009
- Kanócz,T., AGH University of Science and Technology Krakow, Poland October 28-30, 2009
- Kocur,D., Delft University of Technology, The Netherlands March 4–8, 2009
- Kocur,D., National University of Ireland, Galway March 30 - April 2, 2009
- Kocur,D., Univ. of Technology Brno, Czech Republic April 26–29, 2009
- Kocur,D., Vrije Universiteit Brussel, Belgium Jun 14–16, 2009

- Kocur,D., Budapest Tech, Budapest, Hungary Aug. 30 – Sep. 3, 2009
- Kocur,D., Technical University of Ilmenau, Germany September 6–9, 2009
- Kocur,D., University of Peloponnese, Tripolis, Greece October 7–11, 2009
- Levický,D., PIT Aveiro, Portugal Jan. 29 – Feb. 4, 2009
- Levický,D., Univ. of Technology Poznan, Poland Feb. 24 – March 1, 2009
- Levický,D., Univ. of Technology Brno, Czech Republic April 7-8, 2009
- Levický,D., Univ. of Technology Brno, Czech Republic May 5-6, 2009
- Levický,D., ČVUT Prague, Czech Republic September 1-5, 2009
- Levický,D., University of Zagreb, Zadar, Croatia Sep. 26 - Oct. 1, 2009
- Lojka,M., Univ. of Technology Poznan, Poland September 22-27, 2009
- Marcheviský,S., Univ. of Technology Brno, Czech Republic April 26-29, 2009
- Michaeli,L., University Sannio, Benevento, Italy January 26-28, 2009
- Michaeli,L., HIQ, University of Gävle, Sweden June 28-30, 2009
- Michaeli,L., University Sannio, Benevento, Italy October 19-22, 2009
- Mochnáč,J., ČVUT Prague, Czech Republic September 1-5, 2009
- Mochnáč,J., TU of Ilmenau, Germany September 6–11, 2009
- Ondáš,S., Trinity College Dublin, Ireland March 22-27, 2009
- Ondáš,S., TU Budapest, Hungary September 2-6, 2009
- Ondáš,S., University of Gdansk, Poland September 24-26, 2009
- Papaj, J.,TU Wien, Austria September 27-30, 2009
- Papaj, J., Univ. of Technology Poznan, Poland October 19-24, 2009
- Papco,M., ČVUT Prague, Czech Republic September 1-5, 2009
- Pleva,M., Univ. of Technology Poznan, Poland June 21-24, 2009
- Pleva,M., Univ. of Technology Poznan, Poland September 22-27, 2009
- Pleva,M., Univ. of Technology Poznan, Poland October 19-24, 2009
- Ridzoň,R., Univ. of Technology Poznan, Poland Feb. 24 – March 1, 2009
- Ridzoň,R., ČVUT Prague, Czech Republic September 1-5, 2009
- Ridzoň,R., University of Zagreb, Zadar, Croatia Sep. 26 - Oct. 1, 2009
- Ridzoň,R., AGH University of Science and Technology Krakow, Poland October 28-30, 2009
- Rosina,M., HIQ, University of Gävle, Sweden June 22 - July 3, 2009
- Rovňáková,J., Delft University of Technology, Netherland March 4–8, 2009
- Rovňáková,J., University of Peloponnese, Tripolis, Greece October 7–11, 2009
- Staš,J., ČVUT Prague, Czech Republic September 1-5, 2009
- Šaliga,J., University Sannio, Benevento, Italy January 26-28, 2009
- Šaliga,J., University Sannio, Benevento, Italy June 18-27, 2009
- Šaliga,J., HIQ, University of Gävle, Sweden June 28-30, 2009
- Šaliga,J., IMEKO Lisbon, Portugal September 5-9, 2009
- Šaliga,J., University Sannio, Benevento, Italy October 19-22, 2009
- Šterba,J., Ramon Llull University, Barcelona, Spain Feb. 1 – April 31, 2009
- Šterba,J., ČVUT Prague, Czech Republic September 1-5, 2009
- Švecová,M., Delft University of Technology, Netherland March 4–8, 2009
- Švecová,M., University of Peloponnese, Tripolis, Greece October 7–11, 2009
- Turán,J., Neordwijk, Nederland, COST ICO802 March 9-11, 2009
- Varchola,M., George Mason University, Fairfax, USA Feb. 15 – July 15, 2009

6.3. Membership in International Organizations and Societies

- Čižmár, A.: Member IEEE Affiliate Computer Society, No. 41237162.
- Čižmár, A.: Member of Audio Engineering Society, New York, I.D. 44154.
- Galajda, P.: Member of Czech and Slovak Radioelectronics Engineering Society.
- Juhár, J.: Member of the ISCA (International Speech Communication Association).
- Juhár, J.: Member of ISCA International Affairs Sub-committee on Eastern Europe.
- Juhár, J.: Member of AES (Audio Engineering Society), Memb. No. 76122.
- Juhár, J.: Member of IEEE, Memb. No. 90402602.
- Juhár, J.: Member of the editorial board "International Journal of Signal and Imaging Systems Engineering", Issued by Inderscience Publishers, Geneva, Switzerland.
- Kocur, D.: Member of the editorial board of the journal "Acta Polytechnica Hungarica".
- Levický, D.: Member of the editorial board of the journal "Slaboproudý obzor".
- Levický, D.: Member of the IEEE.
- Levický, D.: Member of Czech and Slovak Radioelectronics Society.
- Michaeli, L.: Head of Slovak IMEKO National Committee and head of the IMEKO Technical Committee TC-4 "Measurement of Electrical Quantities".
- Michaeli, L.: Member of the editorial board „Computer Standard & Interfaces“, Issued by Elsevier, Amsterdam, New York.
- Michaeli, L.: Member of the reviewer board "Measurement". Journal IMEKO, Issued by Elsevier, Amsterdam, New York.
- Michaeli, L.: Co-ordinator of IMEKO Working Group "AD and DA metrology".
- Michaeli, L.: Member of the IEEE, Instrumentation & Measurement Society.
- Šaliga, J.: Member of Slovak IMEKO Technical Committee TC-4 "Measurement of Electrical Quantities".
- Turán, J.: Senior Member of the IEEE.
- Turán, J.: Member of Czech and Slovak Radioelectronics Society.

6.4. Membership in Slovak Organizations and Societies

- Čižmár, A.: Member of Technical Standardization Commission No.41 for Telecommunications In Slovakia.
- Doboš, L.: Member of Technical Standardization Commission No.80 for Radiocommunications In Slovakia.
- Drutarovský, M.: Member of the editorial board of the journal "Acta Electrotechnica et Informatica".
- Juhár, J.: Member of Technical Standardization Commission No.55 for Electroacustics and ultrasound In Slovakia.
- Kocur, D.: Executive editor of the editorial board of the journal "Acta Electrotechnica et Informatica".
- Levický, D.: Member of the editorial board of the journal "Acta Electrotechnica et Informatica".
- Michaeli, L.: Member of the scientific board of Electrotechnical Faculty, University Transport and Communication, Žilina, Slovakia.
- Michaeli, L.: Member of the editorial board „Measurement Science Review“,

Issued by SAV, Bratislava.

- Michaeli, L.: Editor in Chief of the editorial board of the journal "Acta Electrotechnica et Informatica".
- Michaeli, L.: Scientific Grant Agency of Slovak Republic.
- Šaliga, J.: Member of the editorial board of the journal "Acta Electrotechnica et Informatica".
- Turán, J.: Member of the Slovak Technical Standardization Committee No.53 for Cables, Conductors and Isolating Materials.
- Turán, J.: Member of the Slovak Technical Standardization Committee No.43 for Terminology.
- Turán, J.: Member of the editorial board of the journal "Acta Electrotechnica et Informatica".

6.5. Contracts, International Scientific Projects

- *Cross-Modal Analysis of Audio and Video Signals (COST Action 2102)*
- *Pervasive Mobile & Ambient Wireless Communications (COST Action 2100)*
- *High Altitude Platforms (HAPs) for Communications and Other Services (COST Action 297)*
- *RF/Microwave Communication Subsystems for Emerging Wireless Technologies (COST Action IC0803)*
- *Propagation Tools and Data for Integrated Telecommunication, Navigation and Earth Observation Systems (COST Action IC0802)*
- *Innovation Transfer Network (Leonardo da Vinci LLP-LDV/TOI/08/IT/493)*
- *Metrological Characterisation of the ADConverters "ADCWAN" (MIUR Italy call: D. M. 5.8.2004, n. 262 – Programmazione del sistema universitario)*
- *INDECT – Intelligent Information System Supporting Observation, Searching and Detection for Security of Citizens in Urban Environment (7.FP, Contract No 218086)*
- *Ultra Wideband Radio Application for localisation of Hidden People and Detection of Unauthorised Objects (6.FP, Contract No 032744)*

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	116	75	8

8 OTHER ACTIVITIES

9 PUBLICATIONS

9.1. Journals

- [1] AFTANAS,M.-DRUTAROVSKÝ,M.: Imaging of the Building Contours with Through the Wall UWB Radar System. In: Radioengineering, Proceedings of Czech and Slovak Technical Universities and URSI Committes, Vol.18, No.3, 2009, 258-264.
- [2] AFTANAS,M.-SACHS,J.-DRUTAROVSKÝ,M.-KOCUR,D.: Efficient and Fast Method of Wall Parameter Estimation by Using UWB Radar. In: Frequenz:

- Journal of RF-Engineering and Telecommunications (FREQUENZ), Vol.63, No.11-12, 2009, 231-235.
- [3] ARPAIA,P.-MICHAELI,L.-RAPUANO,S.: Model-Based Compensation of SAR Nonlinearity. In: IEEE Transactions on Instrumentation and Measurement, Vol.58, No.3, 2009, 541-550.
- [4] ČIŽMÁR,A.-PLEVA,M.-PAPAJ,J.-DOBOŠ,Ľ.-JUHÁR,J.: MobilTel - Mobile Multimodal Telecommunications Dialogue System based on VoIP Telephony. In: Journal of Electrical and Electronics Engineering, Vol.2, No.2, 2009, 134-137.
- [5] ČIŽMÁR,A.-DOBOŠ,Ľ.-PAPAJ,J.: Integration of Modified Security Service Vector to the Manet. In: Journal of Electrical and Electronics Engineering. Vol. 2, No.1, 2009, 135-140.
- [6] DOBOŠ,Ľ.-RATICA,J.: The Interference Measurement and Busy-tone Application in Connection Admission Control Algorithm for Manet. In: Journal of Electrical and Electronics Engineering. Vol.2, No.2, 2009, 138-141.
- [7] DOBOŠ,Ľ.-PATLEVIČ,P.: CAC Algorithm Based on Fuzzy Logic. In: Journal of Electrical and Electronics Engineering, Vol. 2, No.1, 2009, 141-146.
- [8] DROTÁR,P.-GAZDA,J.-GALAJDA,P.-KOCUR,D.: Joint Microstatistic Multiuser Detection and Cancellation of Nonlinear Distortion Effects for the Uplink of MC-CDMA Systems Using Golay Codes. In: International Journal of Electronics, Communications and Computer Engineering, 2009, 87-92. Internet: <www.waset.org/journals/ijecce/v1.php>.
- [9] DROTÁR,P.-GAZDA,J.-KOCUR,D.-GALAJDA,P.: Effects of Spreading Sequences on the Performance of MC-CDMA System with Nonlinear Models of HPA. In: Radioengineering, Vol.18, No.1, 2009, 48-54.
- [10] DRUTAROVSKÝ,M.-ŠALIGA,J.-HRONCOVÁ,I.: Hardware Infrastructure of Remote Laboratory for Experimental Testing of FPGA Based Complex Reconfigurable Systems. In: Acta Electrotechnica et Informatica, Vol.9, No.1, 2009, 44-50.
- [11] FORIŠ,P.-LEVICKÝ,D.: Adaptive Digital Image Watermarking Based on Combination of HVS Models. In: Radioengineering, Proceedings of Czech and Slovak Technical Universities and URSI Committees, Vol.18, No.3, 2009, 317-323.
- [12] GALAJDA,P.-MARCHEVSKÝ,S.-GAMEC,J.-GAMCOVÁ,M.-PILLÁR,S.: Infrastructure for Packet Based e-learning Services Provided Via Satellite. In: Acta Electrotechnica et Informatica, Vol.9, No.1, 2009, 74-80.
- [13] JUHÁR,J.-ONDÁŠ,S.-ČIŽMÁR,A.-RUSKO,M.: About Development and Innovation of Slovak Spoken Language Dialogue System. In: Journal of Electrical and Electronics Engineering, Vol.2, No.1, 2009, 159-164.
- [14] KOCUR,D.-KOŠČ,P.: E-learning Implementation in Higher Education. In: Acta Electrotechnica et Informatica, Vol.9, No.1, 2009, 20-26.
- [15] MARCHEVSKÝ,S.-PODHRADSKÝ,P.-GAMEC,J.-GALAJDA,P.-GAMCOVÁ,M.-PILLÁR,S.: Trends in E-learning Services Delivery Via Current Satellite Systems. In: Acta Electrotechnica et Informatica, Vol.9, No.1, 2009, 12-19.
- [16] ROVNÁKOVÁ,J.-KOCUR,D.: Compensation of Wall Effect for Through Wall Tracking of Moving Targets. In: Radioengineering Proceedings of Czech

and Slovak Technical Universities and URSI Committees, Vol.18, No.2, 2009, 189-195.

- [17] SZOBOSZLAI,P.-TURÁN,J.-VÁSÁRHELYI,J.-SERFŐZŐ,P.: Mojette Transform Based Real-Time Video Surveillance System. In: Carpathian Journal of Electronic and Computer Engineering, Vol.2, 2009, 1-6.
- [18] ŠIMŠÍK,D.-GALAJDOVÁ,A.-DRUTAROVSKÝ,M.-GALAJDA,P.-PAVLOV,P.: Wearable Non-invasive Computer Controlled System for Improving of Seniors Gait. In: International Journal of Rehabilitation Research, Vol. 32, suppl. 1, 2009, 35.
- [19] TURÁN,J.-OVSENÍK,L.-VÁSÁRHELYI,J.: Projecting Tools for Fiber Optic Communication and Optically Powered Sensory Systems: Part I. In: Carpathian Journal of Electronic and Computer Engineering, Vol.2, 2009, 17-20.
- [20] TURÁN,J.-OVSENÍK,L.-VÁSÁRHELYI,J.: Projecting Tools for Fiber Optic Communication and Optically Powered Sensory Systems: Part II. In: Carpathian Journal of Electronic and Computer Engineering, Vol.2, 2009, 21-25.
- [21] VARCHOLA,M.-DRUTAROVSKÝ,M.: Embedded Platform for Automatic Testing and Optimizing of FPGA Based Cryptographic True Random Number Generators. In: Radioengineering, Proceedings of Czech and Slovak Technical Universities and URSI Committees, Vol.18, No.4, 2009.

9.2. Textbooks

- [1] KOCUR,D.-ROVNÁKOVÁ,J.-ŠVECOVÁ,M.: Through Wall Tracking of Moving Targets by M-Sequence UWB Radar. In: I.J.Rudas, J.Fodor, J,Kacprzyk (Eds.): Computational Intelligence in Engineering. Springer's book series 'Studies in Computational Intelligence', Springer Berlin / Heidelberg, 2009, 364-394.

9.3. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	28	41	0

DEPARTMENT OF ELECTRICAL, MECHATRONIC AND INDUSTRIAL ENGINEERING

<http://www.kempi.fei.tuke.sk>

Tel.: ++421 55 602 2279, Fax: ++421 55 633 0115

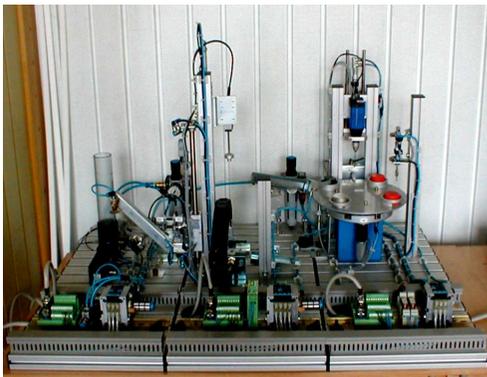
Head of Department
doc. Ing. Michal Girman, PhD.
E-mail: Michal.Girman@tuke.sk



1 DEPARTMENT'S PROFILE

The Department was established in 2005 from the previous units at the faculty: from Department of Electrical Drives and Mechatronics and from Laboratory of Industrial Engineering. The both units fused into the Department of Electrical, Mechatronic and Industrial Engineering.

The Department is responsible for education and research in electrical engineering in fields of power and industrial electronics, electrical machines and apparatuses, electromechanical systems, esp. in controlled drives, industrial and automotive mechatronic systems and in the area of effective production planning and control, quality management, and continuous improvement of products and services. The Department offers all types of university courses (bachelor in 3 branches, two master courses and two Ph.D. courses).



2 STAFF

- Professors:** prof. Ing. Jaroslav Dudrik, PhD.
prof. Ing. Pavol Fedor, PhD.
prof. Ing. Irena Kováčová, PhD.
prof. Ing. Jaroslav Timko, CSc.
prof. Ing. Pavel Zásalický, PhD.
- Associate Professors:** doc. Ing. František Ďurovský, PhD. (by June 2009)
doc. Ing. Viliam Fedák, PhD.
doc. Ing. Želmíra Ferková, PhD.
doc. Ing. Ján Fetyko, PhD. (till May 2009)
doc. Ing. Michal Girman, PhD.
doc. Ing. Michal Kostelný, CSc.
doc. Ing. Peter Kováčik, PhD. (till May 2009)
doc. Ing. Daniela Perduková, PhD.
doc. Ing. Jaroslava Žilková, PhD.
- Assistant Professors:** Ing. Peter Bober, PhD.
Ing. Peter Girovský, PhD. (by June 2009)
Ing. Mgr. Peter Kmec, PhD.
Ing. Peter Košč, PhD.
Ing. Ján Kaňuch, PhD.
doc. Ing. Jozef Ondera, PhD. (till May 2009)
- Assistants:** Ing. Jana Harvanová
- Senior Scientists:** Ing. Peter Keusch
doc. Ing. Juraj Oetter, PhD. (till May 2009)
Ing. Peter Višnyi, PhD.
Peter Hajsák
Ing. Martin Olejár (by February to June 2009)
prof. Ing. Ladislav Zboray, CSc.
- Technical Staff:** Ing. Gabriela Brečková
Zuzana Olexová
František Hajsák
- Ph.D. Students:** Ing. František Baník
Ing. Tomáš Béreš (by September 2009)
Ing. Marcel Bodor (by September 2009)
Ing. Ľubomír Cibula (till September 2009)
Ing. Matúš Hric (by September 2009)
Ing. Michal Kaľavský (by September 2009)
Ing. Karol Kyslan (by September 2009)
Ing. Milan Lacko
Ing. Ľubomír Matis
Ing. Peter Nguyen (by September 2009)
Ing. Vladimír Ruščin (till July 2009)

3 LABORATORIES

- Laboratories of Electrical Engineering
- Power Electronics Laboratory
- Laboratory for CAD (COSMOS, ProEngineer, MATLAB, PSpice, and applied SW)
- Laboratory of Industrial Automation
- Laboratory of Electrical Machines
- Laboratory of Electrical Drives
- Laboratory of Controlled Electrical Drives and Mechatronics
- Laboratory of Process Modelling and Simulation
- Laboratory of Control Systems and Robotics

4 TEACHING

4.1. Undergraduate Study (Bc.)

a) Bc. study programme in Electrical Engineering

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Electrical Engineering Fundamentals	1 st	2/2	Kaňuch
Industrial Electronics	2 nd	2/2	Kováčová
Electrical Machines	3 rd	2/2	Záskalický
Microprocessor Techniques	3 rd	2/2	Fedák
Electrical Drives and Power Electronics	4 th	3/2	Záskalický
ManMachine Interfaces	4 th	2/2	Perduková
Semiconductor Supply Sources and Converters	5 th	3/2	Dudrik
Automation in Industrial Systems	5 th	2/2	Fedor
Bachelor Thesis I.	5 th	0/5	Supervisor
Controlled Drives	6 th	2/2	Đurovský
Electrical Systems Projecting	6 th	2/2	Ferková
Bachelor Thesis II.	6 th	0/9	Supervisor

b) Bc. study programme in Automotive of Mechatronics Systems

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Business and Management	1 th	2/0	Kmec
Industrial Electronics	2 nd	2/2	Kováčová
Microcontroller Techniques	3 th	2/2	Perduková
Computer Applications	3 th	2/2	Perduková
Electrical Machines	3 rd	2/2	Záskalický
Electrotechnics in Vehicles	3 th	2/2	Đurovský
Electrical Actuators and Drives	4 th	2/2	Žilková
ManMachine Interface	4 th	2/2	Perduková
CAE Programs	4 th	2/2	Fedák
Bachelor Thesis I.	5 th	0/8	Perduková
Industrial Control Systems	5 th	2/2	Fedor
Sensors and measurement of non electrical values	5 th	2/2	Fedor
Pneumatic nad Hydraulic Drives	5 th	2/2	Bober
Automotive Mechatronics	5 th	2/2	Đurovský
Bachelor Thesis II.	6 th	0/8	Perduková
Motion Control	6 th	2/2	Đurovský

Projecting of Electrical Systems	6 th	2/2	Ferková
Technical Practice	6 th	0/6	Perduková

c) Bc. study programme in Industrial Engineering

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Business and Management	1 th	2/0	Kmec
Information Systems in Industry	2 nd	2/2	Košč
Industrial Electronics	2 nd	2/2	Kováčová
Electrical Machines	3 rd	3/3	Záskalický
Human Resource Management	3 th	2/2	Košč
Pneumatic and Hydraulic Drive	3 th	2/2	Bober
Microcomputer Techniques	3 th	2/2	Perduková
Electrical Actuators and Drives	4 th	3/3	Žilková
Simulation of Production Systems	4 th	2/2	Bober
Man-Machine Interface	4 th	2/2	Perduková
Production Quality	5 th	2/2	Girman
Design of Electrical Systems	5 th	2/2	Záskalický
Electrotechnics in Vehicles	5 th	2/2	Đurovský
Matlab and its Applications	6 th	2/2	Fedák
Bachelor Thesis	6 th	0/4	supervisor

4.2. Graduate Study (Ing.)

a) Ing. study programme in Electrical Engineering

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Power Semiconductor Systems	7 th	2/2	Dudrik
Applied Electronics	7 th	2/2	Kováčová
Dynamic Effect of Electrical Machines	7 th	2/2	Záskalický
Technology of Production in Electronic	7 th	2/2	Slosarčík
Enterprise Control Management	7 th	2/2	Girman
Control Management	7 th	2/2	Kmec
Electromagnetic Compatibility	8 th	2/2	Kováčová
Electrical Machines for Automatisation	8 th	2/2	Ferková
Semiconductor Converters Construction	8 th	2/2	Dudrik
Control of Assembly Lines with Programming Controllers	8 th	2/2	Fedor
Statistic Control of Process	8 th	2/2	Girman
Semester Project	8 th	0/4	supervisor
Databases Systems	8 th	2/2	
Artificial Intelligence Methods in Control	9 th	2/2	Žilková
Three-Dimensional modelling and Simulation	9 th	2/2	Ferková
Signal Processors	9 th	2/2	Višnyi
Electro Energetic			Kolcun
Servosystems	9 th	2/2	Đurovský
Technology of Production in Electrotechnics	9 th	2/2	Girman
Diploma Thesis	9 th	0/12	supervisor

b) Ing. study programme in Automation of Mechatronic Systems

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Models of Mechatronic Systems	7 th	2/2	Fedák
Non-linear Mechatronic Systems	7 th	2/2	Fedor
Semiconductor Power Systems	7 th	2/2	Dudrik
Semester Project	8 th	0/4	Fedor
Control of Production Systems by PLC	8 th	2/2	Fedor
Electrical machine for automation	8 th	2/2	Ferková
Control of Robots	8 th	2/2	Žilková
Database systems	8 th	2/2	Perduková
Diploma Thesis I.	9 th	0/6	Fedor
Production Technologies in Mechatronics	9 th	2/2	Girman
Servosystems	9 th	2/2	Đurovský
Project Control	9 th	2/2	Girman
Intelligent Control of Mechatronic Systems	9 th	2/2	Žilková
Mechatronic Production Systems	9 th	2/2	Đurovský
Diploma Thesis II.	10 th	0/18	Fedor

c) Ing. study programme in Industrial Engineering

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Power Semiconductor Systems	7 th	2/2	Dudrik
Technology of Production in Electrotechnics	7 th	2/2	Kostelný
Statistical Process Control	7 th	2/2	Bober
Management of Enterprise Processes	7 th	2/2	Girman
Project Management	8 th	2/2	Kmec
Electrical Machines for Automatization	8 th	2/2	Ferková
Control of Assembly Lines with Prog. Controllers	8 th	2/2	Fedor
Web Application	8 th	2/2	Košč
Semester Project	8 th	0/4	
Modelling, Simulation and Optimisation of Processes	9 th	2/2	Girman
Diploma Thesis	9 th	0/12	supervisor

4.3. Undergraduate and Graduate Study for Foreign Students (in English)

All subjects listed above are offered in English language for foreign students.

4.4. Ph.D Postgraduate Course in Electrical Engineering

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Power Converter Systems	1 st	2/0	Dudrik
Ph.D Project I	1 st	0/2	supervisor
Foreign Language I	1 st	2/0	Dept. of Foreign Languages
Servosystems	2 nd	2/0	Fedor
Ph.D Project II	2 nd	0/2	supervisor
Foreign Language II	2 nd	2/0	Dept. of Foreign Languages
Ph.D Project III	3 rd	0/4	Supervisor
Subject of specialization	3 rd	2/0	according

			to the subject
Scientific activity	3 rd	0/8	Supervisor
Ph.D Project IV	4 th	0/2	Supervisor
Scientific activity	4 th	0/8	Supervisor
Ph.D Project IV	5 th	0/2	Supervisor
Scientific activity	5 th	0/8	Supervisor
Ph.D Thesis	5 th	0/9	Supervisor

4.5. Ph.D Postgraduate Course in Mechatronic Systems

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Theory of Mechatronic Systems	1 st	2/0	Fedor
Ph.D Project I	1 st	0/2	supervisor
Foreign Language I	1 st	2/0	Dept. of Foreign Languages
Servosystems	2 nd	2/0	Fedor
Ph.D Project II	2 nd	0/2	supervisor
Foreign Language II	2 nd	2/0	Dept. of Foreign Languages
Ph.D Project III	3 rd	0/4	Supervisor
Subject of specialization	3 rd	2/0	according to the subject
Scientific activity	3 rd	0/8	Supervisor
Ph.D Project IV	4 th	0/2	Supervisor
Scientific activity	4 th	0/8	Supervisor
Ph.D Project IV	5 th	0/2	Supervisor
Scientific activity	5 th	0/8	Supervisor
Ph.D Thesis	5 th	0/9	Supervisor

5 RESEARCH PROJECTS

- **Analysis and quality quantification of building construction projects from EMC aspect.** VEGA (Scientific Grant Agency) project No 1/4174/07, (01/2007 - 12/2009). Co-ordinator: KOVÁČOVÁ, I.
- **Modern Methods of the Electrical Drives Control.** VEGA (Scientific Grant Agency) project No 1/4076/07 (2007 - 2009). Co-ordinator: TIMKO, J.
- **Research of New Generation High Frequency Soft Switching Converters.** APVV project No. APVV -0095-07 (2008-2010). Project contractor: FEI TU Košice. Co-ordinator: DUDRIK, J.
- **New Circuit Breaker up to 63 A and Equipments for Breaker Hourly Tests.** APVV project No. APVV -0287-07 (2008-2010). Project contractor: SEZ Krompachy, co-operation FEI TU Košice. Co-ordinator: DUDRIK, J.
- **Research of behaviour of the small electrical motor by a non harmonic supply;** APVV project No: APVV 0510-06 (2007-2010), Co-ordinator, ZÁSKALICKÝ, P.
- **Research of power semiconductor converters for industrial and electric utility applications.** VEGA (Scientific Grant Agency) Project No 1/0099/09 (2009-2011). Co-ordinator: DUDRIK, J.
- **Centre of excellence of power electronics systems and materials for their components.** Code ITMS: 26220120003, (05/2009 - 04/2011) The project is funded by European Community, ERDF – European regional development

fund. Project contractor: University of Žilina, co-operation FEI TU Košice.
Co-ordinator: DUDRIK, J.

- **Low power static supply development for electrical systems**, Structural Funds Projects of the EU. SF EU (2010-2011), ITMS 26220220029, Project co-ordinator: FEDOR, P.

6 CO-OPERATION

6.1. Co-operation in Slovakia

The Department co-operates with many industrial enterprises in Slovakia having joint project at modernising of the electrical drive systems, control and mechatronic applications: U.S.STEEL Košice, SIEMENS, ABB, BSH Drives and Pumps Michalovce, Křížik Prešov, Schneider Electric Slovakia, Spell Procont Prešov, Spinea Prešov, Vonsch Brezno, Kybernetika Košice, TEKO Košice, ENERGO CONTROL Košice, ZŤS VVU Košice, ŽP Podbrezová, Bukóza Hencovce, Genesis Prešov, Embraco Slovakia Spišská Nová Ves, Kopex Košice, Cogent Košice, Regada Prešov, Slovak Union for Quality, Innovation and Design Q-IMPULZ, Košice, SEZ Krompachy, STAPRO Košice.

6.2. International Co-operation

- University of Zagreb, Croatia
- Brno University of Technology, Czech Republic
- Technical University of Liberec, Czech Republic
- VŠB -Technical University of Ostrava, Czech Republic
- West Bohemian University, Pilsen, Czech Republic
- University of Vaasa, Finland
- University of Technology and Economy, Budapest, Hungary
- University of Miskolc, Hungary
- Delft University of Technology, The Netherlands
- Warsaw University of Technology, Poland
- Czech Academy of Science, Prague.
- Silesian Polytechnic Institute of Gliwice
- Transilvania University of Brasov, Romania
- University of Oradea, Romania

6.2.1. Visits of Staff Members to Foreign Institutions

- FEDÁK, V. – FETYKO, J.: Hungary, Miskolc, 19 - 20. March 2009,(microCAD 2009 International Conference)
- FEDÁK, V. – DUDRIK J.: Croatia, Dubrovnik, 10 - 15 Oct. 2009 (15th International and 3rd Croatian-Slovak Conference on Electrical Drives and Power Electronics)
- FERKOVÁ, Ž., KAŇUCH, J.: Czech Republic, Ostrava, 13 – 15 Jan. 2009, VŠB TU Ostrava
- KAŇUCH, J., ZÁSKALICKÝ, P.: Poland, Rzeszów – Krasiczyn, 23 – 26 June 2009, XLV International Symposium on electrical Machines - SME 2009
- KOSTELNÝ, M., KAŇUCH J., ZÁSKALICKÝ P.: Czech Republic, Brno, 15 – 17 Sept. 2009, VÚT Brno
- FERKOVÁ, Ž., ZÁSKALICKÝ, P.: Czech Republic, Brno, 2 – 3 Nov. 2009, VÚT Brno
- KAŇUCH, J.: Poland, Zakopane, 12. – 14. Nov. 2009, Conference System

Modelling and Control - SMC'2009.

- ZÁSKALICKÝ, P.: Ústav pro elektrotechniku ČSAV, 17.9.-21.9.2009

6.3. Membership in International Organizations, Societies and Committees

- DUDRIK, J. – IEEE member
- DUDRIK, J. – International Conference on ELECTRICAL DRIVES and POWER ELECTRONICS, Dubrovnik, Croatia, 2009. Member of the International Steering Committee.
- DUDRIK, J.: Member of the steering committee International Conference on Engineering of Modern Electric Systems, EMES 09, Oradea, Romania, (Section Electronics).
- DUDRIK, J., FEDÁK, V., FETYKO, J., TIMKO, J.: Power Electronics and Motion Control Council EPE-PEMC – Budapest. Council members.
- FEDÁK, V.: EPE – European Power Electronics and Drives Association, Brussels. Executive Council member, General Assembly member.

6.4. Membership in Slovak Professional Bodies

- TIMKO, J. (Vice-chairman); FEDÁK, V.; ZBORAY, L.; FEDOR, P. FETYKO J., DUDRIK J. - members of Joint Slovak Board for the Ph.D. Study in Electrical Engineering
- TIMKO, J. (chairman), FETYKO, J., GIRMAN, M., KOVÁČOVÁ, I., FEDOR, P., FEDÁK, V., DUDRIK, J.: members of board for the Ph.D. Study in Electrical Engineering at FEI TU Košice
- FERKOVÁ, Ž.: member of Technical Standards Commission on Electrical Machines in SR
- FEDÁK, V.; FETYKO, J.; KAŇUCH, J.; ONDERA, J.; TIMKO, J.; ZÁSKALICKÝ, P.; ZBORAY, L.: members of The SES (Slovak Electrotechnical Society), Branch at FEI TU Košice
- FEDÁK, V.: Council of the Secondary Technical School for EE, Košice (delegate of the FEI TU Košice)

6.5. Contracts, International Projects

- ERASMUS Program: Higher education, partner: University of Vaasa (Finland), duration: 2003 - 2009, contact at department BOBER, P., activity: Co-operation within the ERASMUS Program - students and teachers exchange program.
- ERASMUS Program: Higher education, partner: University of Oradea (Romania), duration: 2006 – 2010 contact: DUDRIK, J., activity: Co-operation within the ERASMUS Program - students and teachers exchange program.

6.6. National Educational Projects

- Virtual Laboratory of Mechatronic Systems Control, 2007-2009, KEGA, No 3/5240/07. Project co-ordinator: ĎUROVSKÝ, F.
- E-learning multimedial education of the subject – Electromagnetic compatibility, 2008-10, KEGA, No 3/6388/08. Project co-ordinator: KOVÁČOVÁ, I.

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number			3

8 OTHER ACTIVITIES

8.1. Symposia, Workshops, Conferences

- 15th International and 3rd Croatian-Slovak Conference on Electrical Drives and Power Electronics, Dubrovnik, 10- 15 Oct. 2009. Our department played a role of the conference co-organisers there.
- STRAPING'09: Seminar and Meeting of Industrial Engineers, May 15-17, 2009, Herľany, Slovakia
- High-Tech Workshop, Herľany 2008 (May 29 -31, 2009). High-Tech (as the abbreviation of High-Technology) presents an engineering workshop aimed to the informal exchange of ideas of teachers, students, graduates and colleagues from practise in the Educational and Training Centre of Technical University of Košice in Herľany (www.gejzir.sk). Organiser: Perduková D. More information about this activity is to be found in www.tuke.sk/hth.

8.2. Projects for Industry

- Repair of control panels in the control room of MPO1 at OC2 (U.S.Steel Košice, s.r.o.), P/104/0018/08, 2008-2009. Co-ordinator: KANUCH, J.
- Training on SIEMENS Power Converters (SIEMENS Slovakia), P/104/0012/09, P/104/0016/09 Co-ordinator: ĎUROVSKÝ, F.

9 PUBLICATIONS

9.1. Books

- [1] FERKOVÁ Ž.,- ĎUROVSKÝ F.,- ZBORAY L.: Application of Genetic Algorithm in Electrical Drives. TU FEI v Košiciach, 2009, ISBN 978-80-553-0321-5. (in Slovak).
- [2] KOVÁČ, D. - KOVÁČOVÁ, I. - MOLNÁR, J.: Electromagnetic Compatibility – measurements. TU, FEI, pp. 72, 2009, ISBN 978-80-553-0151-8. (in Slovak).
- [3] KOVÁČ, D. - KOVÁČOVÁ, I.: EMC a stavebníctvo, vydavateľstvo TU, FEI, pp. 90, 2009, ISBN 978-80-553-0317-8. (in Slovak).
- [4] KOVÁČOVÁ, I. - KOVÁČ, D. - VINCE, T.: Electromagnetic Compatibility. TU, FEI, pp. 138, 2009, ISBN 978-80-553-0150-1. (in Slovak).
- [5] TIMKO, J. - ŽILKOVÁ, J.. - GIROVSKÝ, P.: Simulation and Control of Electrical Drives by Neural Networks. 1. edition, Košice, TU, 2009. - 205 s. - ISBN 978-80-8086-124-7. (in Slovak).
- [6] TIMKO, J. - ŽILKOVÁ, J.. - DUDRIK, J.. - GIROVSKÝ, P.: Electrical Actuators and Drives. Košice. TU, FEI, 2009. 287 pp. ISBN 978-80-553-0168-6. (in Slovak).

9.2. Scientific Journals

Foreign Journals

- [1] GIRMAN, M., - KEUSCH, P.- KMEC, P.: Faults, failures and availability in self-service technology. Management Services, 2009, vol 53, No 4, pp. 44-47. ISSN 0-307-6768.
- [2] KAŇUCH, J., - VIŠNYI, P.: DC drive for universal motor. In: Maszyny elektryczne : Zeszyty problemowe. no. 84 (2009), p. 7-11. ISSN 0239-3646.
- [3] KOVÁČOVÁ, I. - KOVÁČ, D.: Parasitic Capacitances of Power Electrical Systems and EMC. Acta Technica CSAV, Vol. 54, No. 1, 2009, pp. 99-111, ISSN 0001-7043.
- [4] KOVÁČ, D. – KOVÁČOVÁ, I.: Galvanic Coupling - EMC of Electrical Systems (Part IV.), Journal of Electrical Engineering, Romania, Vol. 9, No. 2, 2009, pp. 32-37, ISSN 1582-4594.
- [5] KOVÁČ, D. - KOVÁČOVÁ, I. – TOMČÍKOVÁ, I.: Inductive Coupling of the Electrical Systems. Electrical Power Quality and Utilisation Journal. Vol. 15, No. 1, 2009, pp. 79-83, ISSN 1234-6799.
- [6] KOVÁČOVÁ, I. - KOVÁČ, D.: Inductive Coupling of Power Converter`s – EMC. Acta Polytechnica Hungarica, Vol. 6, No. 2., 2009, pp. 41-53, ISSN 1785-8860.
- [7] ZÁSKALICKÝ, P. - ZÁSKALICKÁ, M.: Mathematical model of a single-phase invertors's with voltage regulation. KOMEL- Maszyny elektryczne, 83/2009, pp. 41-45, Katowice, Poland.

National Journals

- [1] ĎUROVSKÝ, František - FETYKO, Ján - FEDÁK, Viliam: Testing of Drives by Load Torque Emulator. In: Strojárstvo. Vol. 8, No. 5 (2009), s. 8/1-8/5. Internet: <www.strojarstvo.sk> ISSN 1335-2938. (in Slovak).
- [2] FEDOR, P. - PERDUKOVÁ, D.: Inverse Fuzzy Control. Elektroenergetika Journal, Vol.2, No. 3, October 2009, ISSN 1337-6756, <http://jeen.fei.tuke.sk/index.php/jeen> (in Slovak).
- [3] KOCUR, D. - KOŠČ, P.: E-learning implementation in higher education. In: Acta Electrotechnica et Informatica. roč. 9, č. 1 (2009), s. 20-26. Internet: <<http://www.aei.tuke.sk/>> ISSN 1335-8243.
- [4] KOŠČ, P. - TIMČÁK, G. - BOBER, P.: Quality initiatives in E-learning. In: Acta Electrotechnica et Informatica. roč. 9, č. 1 (2009), s. 63-67. Internet: <<http://www.aei.tuke.sk/>> ISSN 1335-8243.

National Specialized Journals

- [1] BANÍK F.: Physical Model of Autonomous Track Vehicle. Elektrotechnický magazín ETM, no.11-12, 2009. (in Slovak).
- [2] ĎUROVSKÝ, František - KEUSCH, Keusch: Development and Testing of Automotive Electronic Components. In: Ai Magazine : Automotive industry magazine : Časopis o autopriemysle, strojárstve a ekonomike. Vol. 2, No. 3 (2009), s. 56-59. ISSN 1337-7612. (in Slovak).

9.3. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	28	8	2

DEPARTMENT OF PHYSICS

<http://web.tuke.sk/feikf/index.html>

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1 DEPARTMENT'S PROFILE

Since the foundation of the Department of Physics (1952), the scientific activities of the department have been predominantly oriented to the study of magnetic properties of materials by radiospectroscopic and static magnetic methods. At present, the research is focused on the study of magnetic properties of amorphous ferromagnetic alloys by static magnetic methods and to the study of polymers by nuclear magnetic resonance (NMR) and some other complementary methods, such as dielectric and dynamic-mechanical spectroscopy.

The department is divided into three sections:

- Section of Physics of Magnetic Materials
- Section of Physics of Macromolecular Systems
- Section of Organization and Development of Tuition

In 2006 the Department of Physics began to participate in the project "Completion of building up of a modern nuclear magnetic resonance laboratory" in the framework of the state programme of research and development. The co-ordinator of this project is the Slovak University of Technology in Bratislava. Other institutions participating in the project are the institutes of Comenius University in Bratislava, P.J. Šafárik University in Košice, and Slovak Academy of Sciences in Bratislava. In 2007, the Slovak National NMR Centre was established, the Solid State NMR Centre of which will be built up at the Department of Physics in 2009. The role of this centre is to meet the research and education requirements in Slovakia in the field of solid state NMR study of materials.



The Department of Physics provides compulsory courses of basic physics as well as a number of optional courses in various fields of physics.

From the academic year 2008/2009, the department offers new bachelor's and engineer's study programmes Physical Engineering of Modern Materials. The graduates of this programme:

- will acquire knowledge on the structure and physical properties of materials with emphasis on progressive materials,
- will acquaint with physical phenomena which are the basis of the methods for investigation and diagnostics of materials, possibilities and procedures of controlled modification of mechanical, thermal, electrical, magnetic and optical properties of various materials,
- will acquire basic knowledge on information technologies, and will be skilled in using computer in modelling and simulation of processes in microstructure of materials.

The graduates can find positions in industry (product testing, controlling production processes), in research and development institutes, and in testing, diagnostics and environmental centres. The extent of acquired knowledge creates conditions for a good adaptability of graduates in various fields of electrotechnics, electronics and related fields.

2 STAFF

Professors: prof. Ing. Karel Kudela, DrSc. (till May 2009)
prof. RNDr. Vladimír Lisý, DrSc.

Associate Professors: doc. RNDr. Júlia Hlaváčová, CSc.
doc. RNDr. Denis Horváth, PhD.
doc. RNDr. Ladislav Novák, CSc.
doc. RNDr. Dušan Olčák, CSc.
doc. Ing. Ján Uhrin, CSc. (till August 2009)
doc. RNDr. Barnabáš Zagyi, CSc.
doc. RNDr. Ján Ziman, CSc.

Assistant Professors:

RNDr. Oľga Fričová, PhD.	Mgr. Jana Kaššovicová, CSc.
RNDr. Zuzana Gibová, PhD.	RNDr. Ján Kecer, PhD.
RNDr. Cyril Hospodár	RNDr. Mária Kládiová, PhD.
RNDr. Viktor Hronský, CSc.	RNDr. Mária Kovaláková, PhD.
RNDr. Mária Hutníková, PhD.	RNDr. Jozef Kravčák, PhD.
RNDr. Mária Kravčíková	Mgr. Mária Rybárová, PhD.
RNDr. Ľubomír Mucha	RNDr. Anna Stančáková
Ing. Stanislava Nagyová	RNDr. Ladislav Ševčovič
Ing. RNDr. Jozef Onufer	RNDr. Jana Tóthová, PhD.
RNDr. Kamila Jelšovská, CSc.	

PhD. Students:

Mgr. Magdaléna Uhrínová
Mgr. Gabriela Vasziová

Technical Staff:

Ema Havlíková
Bc. František Mižák

Alena Jakobová

3 LABORATORIES

3.1. Teaching and Research Laboratories

- Students laboratories for basic course in physics
- NMR laboratories
- Laboratories of magnetic phenomena

3.2. Special Measuring Instruments

- Multinuclear solid state NMR spectrometer Varian 400 MHz
- Spectrometer for TSDC (thermally stimulated depolarization currents) study
- Experimental apparatus designed and assembled in department's laboratory, for the study of magnetization characteristics (magnetization curve, susceptibility, magnetoresistance) of ferromagnetic materials

4 TEACHING

The Department of Physics gives physical courses for students of the following faculties of the Technical University:

- Faculty of Civil Engineering (SvF)
- Faculty of Electrical Engineering and Informatics (FEI)
- Faculty of Mechanical Engineering (SjF)
- Faculty of Metallurgy (HF)
- Faculty of Mining, Ecology, Process Control and Geotechnologies (FBERG)

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Applied Physics (SjF)	2 nd	0/2	Novák
Applied Physics (SjF)	2 nd	0/2	Kravčák
Physics (FBERG)	2 nd	2/2	Lisý
Physics (FBERG)	2 nd	3/2	Jelšovská
Physics (FBERG)	2 nd	2/0	Jelšovská
Physics (FBERG)	2 nd	3/0	Jelšovská
Physics 1 (FBERG)	2 nd	3/3	Jelšovská
Physics 1 (FBERG)	2 nd	2/2	Jelšovská
Physics (SjF)	1 st	2/1	Novák
Physics (SjF)	1 st	2/0	Novák
Physics (SjF)	1 st	2/2	Novák
Physics (SjF)	1 st	2/0	Novák
Physics (SvF)	1 st	2/2	Zagyí
Physics I (HF)	2 nd	4/3	Uhrin
Physics I (HF)	2 nd	2/0	Uhrin
Physics I (SvF)	1 st	2/2	Zagyí
Physics (FEI)	2 nd	3/2	Hlaváčová Kaššovicová Olčák, Ziman Hronský

Physics (FEI, in English)	2 nd	3/2	Hlaváčová
Physics I (HF)	3 rd	4/3	Uhrin
Physics II (SvF)	2 nd	2/1	Zagyi
Physics II (SjF)	2 nd	2/2	Novák
Physics II (SjF)	2 nd	2/0	Kecer
Physics II(FBERG)	3 rd	2/3	Jeļšovská
Physics II(FBERG)	3 rd	3/0	Jeļšovská
Physics Seminar (HF)	2 nd	0/2	Kladivová
Physics Seminar (FEI)	2 nd	0/2	Kravčíková Ševčovič

4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/exercises (hours per week)	Lecturer
Physics 2 (FBERG)	1 st	2/2	Jeļšovská
Physics 3 (FBERG)	1 st	2/2	Jeļšovská
Physics 2 (FBERG)	1 st	2/0	Jeļšovská
Physics II (HF)	1 st	3/2	Ziman
Physics II (HF)	1 st	2/0	Kladivová
Theory of the electromagnetic field	1 st	2/2	Kaššovicová
Solid State Physics (FEI)	1 st – 4 th	3/2	Hronský
Quantum Mechanics	1 st – 4 th	2/2	Kudela
Nuclei and Particles	1 st – 4 th	2/2	Hlaváčová
Radiation in Space and its Measurement	1 st – 4 th	2/2	Kudela
Modern Soft Magnetic Materials	1 st – 4 th	2/2	Novák
Introduction to Plasma Physics	1 st – 4 th	3/0	Kudela
Radiospectroscopic Measurements	1 st – 4 th	0/3	Ševčovič
Nuclear Magnetic Resonance Methods	1 st – 4 th	3/0	Oičák
Physics and the Present	1 st – 4 th	2/2	Hlaváčová Hronský Kladivová Kudela

5 RESEARCH PROJECTS

- **Magnetic reversal and modification of the structure in non-equilibrium ferromagnetic alloys**, S.G.A. project, No. 1/4013/07, Principal investigator: doc. RNDr. L. Novák, CSc.
- **Anomalous effects in the rheology of polymer liquids**, S.G.A. project No. 1/0300/09, Principal investigator: prof. RNDr. V. Lisý, DrSc.
- **Completion of building up of a modern nuclear magnetic resonance laboratory** - Research and development project No 2003SP200280203 of a state thematic program of research and development "Complex Solution of Support and Effective Use of Science and Research Infrastructure" Co-ordinator of the project: doc. Ing. Tibor Liptaj, CSc., STU in Bratislava, Co-ordinator for TU in Košice: doc. RNDr. D. Oičák, CSc.

- ***Interactions of the light nuclei and spin effects***. S.G.A. project No. 1/4010/07, Principal investigator: prof. RNDr. G. Martinská, CSc. (Faculty of Science of P. J. Šafárik University Košice), collaborators: M. Kravčíková
- ***Definition and quantification of parameters for the calculation of noise indicators and vibrations for determination of environmental capacity of roads and railways*** S.G.A. project No. 1/4203/07 Principal investigator: Ing. B. Salaiová, CSc. (Faculty of Civil Engineering, TU Košice), collaborators: M. Kovaľaková, J. Hlaváčová
- ***Energetic particles in the selected formations of space plasma***. S.G.A. project No. 2/7063/27, Institute of Exp. Physics, SAS, Košice, Principal investigator: prof. Ing. K. Kudela, DrSc., collaborators: J. Kaššovicová
- ***Environmental aspects of excavation of polymetallic concretions on the bed of Pacific Ocean in an area of Clarion-Clipperton***, S.G.A. project No. 1/4190/07, Principal investigator: Ing. L. Domaracká, PhD. (F BERG, TU Košice), collaborators: M. Rybárová
- ***Computer simulations of tumor growth using methods of cellular automata and agent-based models***, S.G.A. project No. 1/4021/07, Principal investigator: RNDr. B. Brutovský, CSc. (Faculty of Science of P. J. Šafárik University in Košice), collaborators: V. Lisý
- ***The logistics system for mining enterprise of 21st century***, S.G.A. project No. 1/4186/07, Principal investigator: doc. Ing. J. Spišák, PhD. (F BERG, TU Košice), collaborators: K. Jelšovská
- ***Through Microcosmos to Understanding of Macrocosmos***, S.R.D.A. Project No. LPP-01810-07, Institute of Experimental Physics of the Slovak Academy of Sciences, Principal investigator: RNDr. E. Kladiva, CSc., co-operating organization: Technical University of Košice, collaborators: J. Hlaváčová, M. Kovaľaková, M. Kravčíková, J. Ziman
- ***Scouting and Education Talents in Physics by Physics Competitions on the Elementary and Secondary Schools***, S.R.D.A. Project No. LPP-0067-07 Principal investigator: prof. Ing. Ivo Čáp, CSc., University of Žilina, co-operating organization: Technical University of Košice, collaborators: L. Mucha, M. Kladivová
- ***The logistics system of crisis situations in mining***, S.G.A. project No. 1/0267/08 Principal investigator: prof. Ing. M. Petruš, PhD. (F BERG, TU Košice), collaborators: K. Jelšovská
- ***Study of a novel generation of environmental nanoadsorbents and carriers of efficacious elements based on porous materials***, S.G.A. project No. 1/0107/08, Principal investigator: doc. RNDr. M. Reháková, CSc. (Faculty of Science of P. J. Šafárik University in Košice), collaborators: S. Nagyová
- ***Evaluation of home natural resources of aluminosilicates (clinoptilolite) for water treatment***, S.G.A. project No. 1/0193/09, Principal investigator: Prof. RNDr. E. Chmielewská, CSc. (Faculty of Science of J. A. Komenský University in Bratislava), collaborators: S. Nagyová

- ***Revealing Microworld Mysteries through Experimental Data Analysis***, S.R.D.A. project No. LPP-005-09 Principal investigator: RNDr. A. Dirner, CSc., co-operating organisation: Technical University of Košice, collaborators: J. Hlaváčová, M. Kovaľáková, M. Kravčíková, Z. Gibová

6 **CO-OPERATION**

6.1. **Co-operation in Slovakia**

- Institute of Physics, Faculty of Science, P. J. Šafárik University in Košice
- Institute of Experimental Physics of the Slovak Academy of Sciences, Košice
- Polymer Institute, Slovak Academy of Sciences, Bratislava
- Research Institute for Man-Made Fibers in Svit
- Faculty of Chemical and Food Technology, Slovak University of Technology, Bratislava

6.1.1. **Visitors to the Department**

- Doc. Dr. Lovas, A. from Budapest University of Technology and Economics, Hungary

6.2. **International Co-operation**

- Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic
- Institute für Kernphysik, Forschungszentrum Jülich, Germany
- Institute of Atmospheric Physics, Prague, Czech Republic
- Central Physical Research Institute, RMKI KFKI, Budapest, Hungary
- Faculty of Physics, Odessa National University, Odessa, Ukraine
- Budapest University of Technology and Economics, Hungary
- Institute of Physics, A. Mickiewicz University, Poznan, Poland

6.3. **Membership in International Organizations and Societies**

- Mucha, Ľ.: Member of the Board of the International Physics Olympiad
- Lisý, V.: Member of the American Physical Society and the Institute of Physics (UK).

6.4. **Membership in Slovak Organizations and Societies**

- Mucha, Ľ.: Vice President of the Slovak Physics Olympiad
- Lisý, V.: Scientific Grant Agency of the Slovak Republic
- Kladivová, M.: Member of the Slovak Physics Olympiad
- Lisý, V.: Member of the joint commissions for the doctoral studies in Biophysics, and in General Physics and Mathematical Physics (both at the P.J. Šafárik University in Košice and the Comenius University in Bratislava).
- Lisý, V.: Member of the Working Group for Physics of the Accreditation Commission Counselling Body of the Government of the Slovak Republic

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	0	0	1

8 OTHER ACTIVITIES

Organization of the scientific conference Physics of Materials '09 on 14 – 16 October 2009 in Košice.

9 PUBLICATIONS

9.1. Books

- [1] LISÝ, Vladimír - OLČÁK, Dušan: Physics of materials '09 : Proceedings of the scientific conference: 14-16 October 2009, Košice, Slovakia. Košice : Elfa, 2009, 181 p., ISBN 978-80-8086-122-3

9.2. Journals

- [1] BUDZANOWSKI, A. - KRAVČÍKOVÁ, M. et al.: Search for eta-mesic nuclei in recoil-free transfer reaction. In: Physical Review C: Nuclear physics. vol. 79, no. 1 (2009), p. 012201-1-012201-4, ISSN 0556-2813
- [2] BUDZANOWSKI, A. - KRAVČÍKOVÁ, M. et al.: Cross section and tensor analysing power of the dd --- eta alpha reaction near threshold. In: Nuclear Physics A. vol. 821, no. 1-4 (2009), p. 193-209, ISSN 0375-9474
- [3] BUDZANOWSKI, A. - KRAVČÍKOVÁ, M. et al.: Precision measurements of the pp --- pí+pn and pp --- pí+d reactions: importance of long-range and tensor force effects. In: Physical Review C. vol. 79, no. 6 (2009), p. 061001-1-061001-4, ISSN 0556-2813
- [4] HUTNÍKOVÁ, Mária - HUTNÍK, Ondrej: Some special functions identities arising from commuting operators. In: Reports on mathematical physics. vol. 63, no. 2 (2009), p. 251-262, ISSN 0034-4877, Internet: <http://www.sciencedirect.com/science/journal/00344877>
- [5] JHA, V. - BUDZANOWSKI, A. - CHATTERJEE, A. - HAWRANEK, P. - JAHN, R. - JAIN, B.K. - KAILAS, S. - KILIAN, K. - KLICEWSZKI, S. - KIRILLOV, Da. - KIRILLOV, Di. - KOLEV, D. - KRAVČÍKOVÁ, M. - LESIAK, M. - LIEB, J. - LIU, L.C. - MACHNER, H. - MAGIERA, A. - MAIER, R. - MARTINSKA, G. - NEDEV, S. - PISKUNOV, N. - PROTIC, D. - RITMAN, J. - VON ROSSEN, P. - ROY, B.J - SHUKLA, P. - SITNIK, I. - SIUDAK, R. - TSENOV, R. - URBAN, J. - VANKOVA, G.: Search of eta-nucleus bound state formation in recoil free transfer reaction. In: International Journal of Modern Physics E-Nuclear Physics. vol. 18, no. 5-6 (2009), p. 1378-1382, ISSN 0218-3013
- [6] KLADIVOVÁ, Mária - ZIMAN, Ján: Influence of the Hall effect on domain wall mobility in a cylindrical sample with circumferential easy axis. In: Physica Status Solidi (b). vol. 246, no. 10 (2009), p. 2341-2345, ISSN 0370-1972
- [7] KOČIŠOVÁ, Jana - HORVÁTH, Denis - BRUTOVSKÝ, Branislav: The efficiency of individual optimization in the conditions of competitive growth. In: Physica A: Statistical Mechanics and its Applications. vol. 388, no. 17 (2009), p. 3585-3592, ISSN 0378-4371

- [8] REHÁKOVÁ, Mária - CASCIOLA, Mario - ČUVANOVÁ, Silvia - WADSTEN, Tommy - ŠÁLY, Vladimír - NAGYOVÁ, Stanislava - FORTUNOVÁ, Ľubica - SGANAPPA, Manolo - PACKA, Juraj: Nanosized composites of synthetic zeolites and silver iodide as potentially electrochemically active materials. In: Journal of Inclusion Phenomena. doi 10.1007/s10847-009-9647-1 (2009), p. 1-7, ISSN 0923-0750
- [9] STEPHAN, E. - KISTRYN, St. - KALANTAR-NAYESTANAKI, N. - BIEGUN, A. - BODEK, K. - CIEPAL, I. - DELTUVA, A. - EPELBAUM, E. - ESLAMI-KALANTARI, M. - FONCESA, A.C. - GLÖCKLE, W. - GOLAK, J. - JHA, V. - KAMADA, H. - KIRILLOV, DA. - KIRILLOV, DI. - KIS, M. - KLICZEWSKI, St. - KLOS, B. - KOZELA, A. - KRAVČÍKOVÁ, Mária - KYRYANCHUK, V.M. - LESIAK, M. - MACHNER, H. - MAGIERA, A. - MAHJOUR-SHAFIEI, M. - MARTINSKÁ, G. - MESSCHENDORP, J. - MICHERDZINSKA, A. - NOGGA, A. - PISKUNOV, N. - PROTIC, D. - RAMAZANI, A. - VON ROSSEN, P. - ROY, B.J. - SAKAI, H. - SAUER, P.U. - SEKIGUCHI, K. - SITNIK, I. - SIUDAK, R. - SKIBINSKI, R. - SWORST, R. - URBAN, J. - WITALA, H. - ZEJMA, J. - ZIPPER, W.: Three-nucleon interaction dynamics studied via the deuteron-proton breakup. In: International Journal of Modern Physics A. vol. 24, no. 2-3 (2009), p. 515-520, ISSN 0217-751X
- [10] ŠEVČOVIČ, Ladislav - MUCHA, Ľubomír: Study of stretched polypropylene fibres by ¹H pulsed and CW NMR spectroscopy. In: Solid State Nuclear Magnetic Resonance. vol. 36, no. 3 (2009), p. 151-157, ISSN 0926-2040
- [11] URBÁN, Jozef - KRAVČÍKOVÁ, Mária: Search for bound eta-nucleus states. In: International Journal of Modern Physics A. vol. 24, no. 2-3 (2009), p. 206-213, ISSN 0217-751X
- [12] BALLA, S. - VEHOVSZKY, B. - BÁRDOS, A. - KOVALÁKOVÁ, M. : The study of H-absorption-desorption process in Ni67-⁹⁰Zr33 glassy alloys monitored by in situ resistance measurements. In: Journal of Physics: Conference Series: The open-access journal for conferences. vol. 144, no. 012012 (2009), p. 1-4, ISSN 1742-6588
- [13] BÁN, Krisztián - KOVÁČ, Jozef - NOVÁK, Ladislav: The study of Curie point shifts in Fe(Ni)-based glasses induced by hydrogen absorption and low temperature storage. In: Journal of Physics: Conference Series. vol. 144, no. 012013 (2009), p. 1-4, ISSN 1742-6588
- [14] LISÝ, Vladimír - TÓTHOVÁ, Jana: Multi-pulsed free-induction NMR signal from spins diffusing in a spatially restricted flow. In: Diffusion fundamentals. vol. 9, no. 6 (2009), p. 1-10, ISSN 1862-4138

9.3. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	6	25	1

DEPARTMENT OF CYBERNETICS AND ARTIFICIAL INTELLIGENCE

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Head of Department
prof. Ing. Ján Sarnovský, CSc.
E-mail: Jan.Sarnovsky@tuke.sk



1 DEPARTMENT'S PROFILE

The Department (DCAI) is responsible for education in the following bachelor study programs: Cybernetics, Intelligent Systems; in the following master study programs: Cybernetics, Artificial Intelligence, Automation; and following PhD-study programs: Cybernetics, Artificial Intelligence, and Automation. In cooperation with Faculty of Economics also for bachelor and master study programs Business Informatics.

The main research topics at the Department are intelligent methods and algorithms for control and modeling of large-scale systems; risk-sensitive diagnosis of uncertain systems; computational intelligence techniques for modeling of intelligent systems and miscellaneous applications; intelligent decision support systems; pattern recognition; knowledge discovery; knowledge technologies for information retrieval and knowledge management; and computational and cognitive neuroscience.



The predecessor of the Department was founded in 1964. Department of Cybernetics and Artificial Intelligence was adapted in 1989. Currently it has 24 staff members, 34 internal and 14 external Ph.D. students. There are 3 sections within the department: Cybernetics and Automation, Artificial Intelligence, and Business Informatics. Within the Department there are active two research Centers: Centre for Cybernetics (<http://cybernetics.fei.tuke.sk/cybervirtlab/>) and Centre for Intelligent Technologies (www.ai-cit.sk).

The Department is involved in a number of research and educational projects. The following types of projects were under way in 2009: 3 European IST projects (2 integrated projects, 1 STREP, 1 Socrates thematic network, 1 US National Institutes of Health research project, 6 grants awarded by Science Grant Agency, 1 grant awarded by the Slovak Research and Development Agency Project, 1 grant awarded by Cultural and Educational Grant Agency, 3 other international grants and 1 project supported by the Research & Development Operational Programme funded by the ERDF.

2 STAFF

Professors: prof. Ing. Dušan Krokavec, CSc.
Dr.h.c. prof. Ing. Ladislav Maďarász, CSc.
prof. RNDr. Eva Ocelíková, CSc.
prof. Ing. Tomáš Sabol, CSc.
prof. Ing. Ján Sarnovský, CSc.
prof. Ing. Peter Sinčák, CSc.

Associate Professors: doc. Ing. Anna Filasová, CSc.
doc. Ing. Anna Jadlovská, PhD.
doc. Ing. Ján Jadlovský, CSc.
doc. Ing. Marián Mach, CSc.
doc. Ing. Kristína Machová, CSc.
doc. Ing. Ján Paralič, PhD.
doc. Ing. Iveta Zolotová, CSc.
doc. Ing. Zoltán Tomori, PhD.

Assistant Professors: Ing. Rudolf Andoga, PhD.
Ing. František Babič, PhD.
Ing. Karol Furdík, PhD.
Dr. Ing. Vratislav Hladký
Ing. Rudolf Jakša, PhD.
Ing. Norbert Kopčo, PhD.
Ing. Ján Liguš, PhD.
Ing. Martin Sarnovský, PhD.
Dr. Ing. Ján Vaščák

Researchers: Ing. Marián Bučko, CSc.
Ing. Marek Duľa
Ing. Ladislav Fözö, PhD.
Ing. Stanislav Laciňák, PhD.
Ing. Ladislav Takáč, PhD.

3 LABORATORIES

- Centre for Intelligent Technologies: Laboratory of Autonomous Systems (LAS-CIT), Laboratory of Humanoid Robots (LHR-CIT) <http://www.ai-cit.sk>
- Centre of Cybernetics (L-513) <http://cybervirtlab.fe.i.tuke.sk/CyberVirtLab/>, <http://web.tuke.sk/kybernetika/labaky/L513/>
- Laboratory of Intelligent Information and Control Systems (L-535), <http://web.tuke.sk/kybernetika/labaky/L535.html>
- Laboratory of Distributed Control Systems - ROCKWELL AUTOMATION LABORATORY (L-536), <http://web.tuke.sk/kybernetika/labaky/L536.html>
- Laboratory of Intelligent Control Networks (L-509), <http://web.tuke.sk/kybernetika/labaky/L509.html>
- Laboratory of Speech and Pattern Recognition (V-147)
- Perception and Cognition Laboratory (V-31) <http://pcl.tuke.sk>
- Laboratory of Knowledge Technologies (V-101a) <http://web.tuke.sk/kybernetika/labaky/V101a.html>
- Laboratory of One-Chip-Computers (V-101b)
- Laboratory of intelligent control systems of aircraft engines (in cooperation with Faculty of Aeronautics)

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Introduction to Business Informatics	1 st	1/2	Paralič, J.
Computers and Algorithms	2 nd	2/2	Jadlovská, Jadlovský
Office Information Systems	2 nd	1/2	Zolotová
Elements of Control Systems	2 nd	2/2	Hladký
Artificial Intelligence	2 nd	2/2	Machová, Paralič
Simulation systems in Business Informatics	2 nd	2/2	Jadlovská, Hladký
Foundations of Automatic Control	3 rd	2/2	Madarász
Simulation Systems	3 rd	2/2	Jadlovská
Artificial Intelligence	3 rd	2/2	Sinčák, et al.
Knowledge-Based Systems	3 rd	2/2	Machová
Applications of Operation Systems in Management	3 rd	2/2	Liguš
Application Programming	3 rd	2/2	Jakša
Control of Technological Processes	4 th	2/2	Liguš
Control and Visualization Systems	4 th	2/2	Zolotová
Identification and Modeling	4 th	2/2	Filasová
Linux I.	4 th	2/2	Jakša
Computer Tools for Technological Systems Control	4 th	2,2	Jadlovský
Applications of Artificial Intelligence	4 th	0/2	Sinčák
Scheduling and Logistics	4 th	2/2	Paralič
Application programming	4 th	0/2	Jakša
Computer (Based) Control	5 th	2/2	Krokavec
Database Management System Applications	5 th	2/2	Ocelíková

Protocols and Interfaces	5 th	2/2	Jadlovský
Project Management	5 th	2/2	Sabol
Introduction to Neurosciences	5 th	2/2	Kopčo
Cybernetics and Management	6 th	2/2	Sarnovský
System Analysis and Synthesis	6 th	2/2	Madarász
Introduction to Non-linear Systems	6 th	2/2	Jadlovská
Effective and financial management	6 th	2/2	Bučko

4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Optimal and Adaptive Control Theory	1 st	2/2	Sarnovský
Computer Vision	1 st	2/2	Tomori
Intelligent Control Systems	1 st	2/2	Liguš
Knowledge Management	1 st	2/2	Paralič, J.
Information Systems for Business Processes	1 st	2/2	Zolotová
Discrete-time Systems	1 st	3/2	Krokavec, D.
Theoretical Foundations of Artificial Intelligence	1 st	2/2	Sinčák
Selected topics of Artificial Intelligence	1 st	2/2	Sabol
XML Technology Seminar	1 st	1/2	Vrana, Mach
IT Environment Control	1 st	2/2	Sarnovský M., Furdík
Online Identification	1 st	2/2	Krokavec
Logic Control	1 st	2/2	Liguš
Distributed Control Systems	2 nd	2/2	Jadlovský
Control and Artificial Intelligence	2 nd	2/2	Jadlovská
Robust Control	2 nd	2/2	Filasová
Evolutionary Algorithms	2 nd	2/2	Mach
Multicriterial Decision Making	2 nd	2/2	Ocelíková
Machine Learning	2 nd	2/2	Machová
Logic Programming	2 nd	1/1	Paralič
Stochastic Systems	2 nd	2/2	Krokavec, D.
Fuzzy Decision	2 nd	2/2	Vaščák
Complexity and Decision Making	2 nd	2/2	Madarász
Engineering econometrics	2 nd	2/2	Krokavec
Speech Recognition	2 nd	2/2	Krokavec, D.
Intelligent Sensor Systems	2 nd	2/2	Krokavec, D.
Interactive Systems	2 nd	2/1	Jakša
Integrated manufacturing systems	3 rd	3/2	Madarász
Humanoid Technologies	3 rd	2/2	Jakša
Dynamic Systems Diagnostics	3 rd	2/2	Krokavec, D.
Complex Systems Control	3 rd	2/2	Hladký
LISP applications	3 rd	0/2	Mach
Management Information Systems	3 rd	2/2	Jadlovský
Complexity and Decision Making	3 rd	2/2	Madarász
Semantic Technologies	3 rd	2/2	Machová
Neuro-fuzzy Systems	3 rd	2/2	Vaščák
Cybernetics	3 rd	2/2	Sarnovský
Knowledge Discovery	3 rd	2/2	Paralič

Philosophic Problems of Cybernetics and AI	4 th	2/2	Sarnovský
Repetition of AI Foundations	4 th	0/2	Sinčák
AI Applications Seminar	4 th	2/2	Sinčák

5 RESEARCH PROJECTS

- Knowledge Practices Laboratory (KP-Lab)** is an integrated project funded by the European Commission within the IST Program (6th Framework Program) IST-2000-29207, coordinator: University of Helsinki. Duration: 2006-2011, Team members from DCAI: Ján Paralič (team leader), František Babič, Peter Bednár, Karol Furdík, Jozef Wagner, Gabriel Tutoky. Activity: KP-Lab is an ambitious project that focuses on developing a learning system aimed at facilitating innovative practices of sharing, creating and working with knowledge in education and workplaces. KP-Lab presents a unifying view of human cognition. It is based on the assumption that learning is not just individual knowledge acquisition or social interaction, but shared efforts of transforming ideas and social practices. The objective of the KP-Lab project is to develop theories, tools, and practical models to elicit deliberate advancement and the creation of knowledge, as well as the corresponding transformation of knowledge practices in education and workplaces. The essential way of developing the collaborative technologies is through a co-evolutionary process involving researchers, technological developers and users. Web page: <http://www.kp-lab.org>
- HYDRA (IST-2005-034891)**, *Networked embedded system middleware for heterogeneous physical devices in a distributed architecture*, is a research project funded by the European Commission within the IST Program (6th Framework Program, IP). Team members from DCAI (in cooperation with the Faculty of Economics): Tomáš Sabol, Marián Mach, Peter Butka, Martin Sarnovský. Duration: 2006-2010. Activity: The aim of the project is to research, develop and validate middleware for networked embedded systems that allows developing cost-effective, high-performance ambient intelligence applications for heterogeneous physical devices, and a software development kit enabling developers to develop innovative applications based on the middleware. Web page: <http://www.hydramiddleware.eu/news.php>
- Access-eGov, Access to e-Government Services Employing Semantic Technologies**, is a research project funded by the European Commission within the IST Program (6th Framework Program) FP6-2004-27020, coordinator: Tomáš Sabol. duration: 2006-2009, TUK team members (in cooperation with the Faculty of Economics): Marián Mach, Peter Bednár, Karol Furdík. Activity: Access-eGov addresses one of the main objectives of the Action Plans eEurope and eEurope+ "Government on-line: electronic access to public services" by "bringing administrations closer to citizens and businesses through the use of Internet" while putting user at the centre. Access-eGov is a thirty-six months EU-funded research and development project that aims to develop and validate a platform for composition of government services into complex process definitions (covering life events/business episodes) enabling semantic interoperability of particular e-Government services. Web page: <http://www.accessegov.org>

- **Multiagent networked control with automatic reconfiguration**, Scientific Grant Agency project No. 1/0617/08, duration: 2008 – 2010, members: Ján Sarnovský (project leader). Activities: The scientific project Multiagent networked control with automatic reconfiguration has a goal to research, develop and implement the algorithms and control methods of the individual networked control elements, whose interconnections are realized by communication networks using the principles and methods of artificial intelligence. The project main focus is on the control algorithms as well as on the behavioral algorithms of the networked control elements with so called Plug and Play network functionality. By the modeling the networked control systems as the multiagent system and by the process formalization will be created the concrete algorithms for its automatic configuration and reconfiguration in the network environment with their consequences implementation in the physical laboratory conditions in the area of mobile robotics and other models.
- **Methods for reconfigurable control systems design**, Scientific Grant Agency project No. 1/0328/08, duration: 2008 – 2010, members: Dušan Krokavec (project leader), Filasová Anna, Hladký Vratislav, Liguš Ján, Kocsis Pavol. Activities: The project Design of reconfigurable control systems is focused on the fault-tolerant control systems. The basic research is a fundamental part of the project and is undertaken in the specific areas of model based fault detection and isolation, control system reconfiguration, as well as robust control of parametrically uncertain linear dynamic systems in reconfigurable structures. The focal scientific points of the project are in the development of new integrated methods and algorithms to design a stability guaranteed fault-tolerant control structure with active reconfiguration; the terminal scientific objectives are the application-oriented computational methods for residual evaluation, the sophisticated reconfigurable schemes with explicit consideration of system performance degradation, as well as the appropriate procedures associated with interacting multiple control structures and the residual evaluation (decision making) strategy in reconfigurable control.
- **Methods and Tools of Intelligent and Information Technologies for object Recognition and Classification**. Scientific Grant Agency project No. 1/0386/08, duration: 2008 – 2010, members: Eva Ocelíková (project leader), Iveta Zolotová, Jana Výrostková, Marián Bučko, Erna Demjénová, Marián Bakoš, Oľga Duřová, Peter Karch. Activity: Project focuses on design of new and modified methods and tools in decision support systems with emphasis on pattern recognition. It includes integrated chain of tasks starting with data acquisition, pre-processing and storing of input data, throughout knowledge discovery, to its presentation into decision making link in a suitable user interface. The attention will be focused on selection of informative features for decision on methods of object classification and composite classifiers. From latest information technologies, emphasis will be put on internet technology. Project implements theoretical-experimental analysis and integration of tools into the application areas for control of technological processes (situation control, SCADA/HMI systems, intelligent control and information systems), for ecology (remotely sensed data) and for medicine (cardiovascular illnesses, bio-medical images).
- **Situational control algorithms and large scale systems modeling**, Scientific Grant Agency project No. 1/0394/08, duration: 2008 – 2010,

members: Ladislav Madarász (project leader), members: Andoga Rudolf Ing. PhD, Fózó Ladislav, Ing, PhD., Modrovičová Jana, Ing., Bučko Marian Ing. CSc., Adamčík František doc. Ing. CSc. (Faculty of Aeronautics), Považan Jozef prof. Ing. CSc. (Faculty of Aeronautics), Lazar Tobiáš prof. Ing. DrSc. (Faculty of Aeronautics), Hocko Marián Ing. PhD. (Faculty of Aeronautics), Kabát Ján Ing. (Faculty of Aeronautics), Piľa Ján Ing. PhD. (Faculty of Aeronautics), Kolesár Ján Ing. PhD. (Faculty of Aeronautics), Judičák Jozef, Ing. (Faculty of Aeronautics). Activities: Nowadays, the area of technical systems is mainly focused to satisfy the demands for safety, quality and efficiency. Among the growing complexity of present systems, it is necessary to project such systems that will take all the three mentioned contrary demands into account. These facts bring us to a task of precision modeling of such systems and following design of progressive methods of their control. One of the efficient approaches in this area is also the methodology of situational control based on situational classification of operational states of a system designed as a general set of approaches to large scale systems control. This approach nowadays expects use of modern knowledge from the areas of artificial intelligence, modeling and control. Special attention will be put also to particular application results and their technical realization. In the area of large scale systems modeling, the emphasis will be put on creation of high precision models in an integrated virtual environment.

- **Methods for annotation, search, creation, and accessing knowledge employing metadata for semantic description of knowledge**, Scientific Grant Agency project No. 1/4074/07, duration: 2007 – 2009, members: Marián Mach (project leader), Tomáš Sabol, Ján Paralič, Kristína Machová, Peter Bednár, Peter Butka, Martin Sarnovský, František Babič, Peter Smatana, Pavol Jasem, Jozef Vrana; activity: Project focuses on work with knowledge in form of metadata. This metadata enable to define content of information entities (most often in form of textual documents) in a way suitable for machine processing. Emphasis is put on domain theories in form of ontological knowledge models, parts of which may be used for annotation of information. Project should bring progress in the following research areas: Annotation of knowledge by means of classification and clustering algorithms; Automatic abstracts' generation; Web mining using knowledge models; Design of conceptual ontological models; Retrieval in the environment with semantically described knowledge; Support of knowledge creation processes; Text mining in distributed environment.
- **Learning systems based on computational intelligence**, Scientific Grant Agency project No. 1/0885/08, duration: 2008 – 2010, members: Peter Sinčák (project leader)
- **Contextual plasticity in spatial auditory maps**. National Institutes of Health - National Institutes of Deafness and Communication Disorders (USA) # 1 R03 TW007640-01, duration: 2006 – 2009, members: Barbara Shinn-Cunningham (Boston University), Norbert Kopčo (Principal Investigator), Rudolf Andoga. Summary: The proposed research has two main goals. The first goal is scientific: to gain new knowledge about the dynamic processes involved in human spatial auditory perception. Such knowledge is important for practical reasons (e.g., for the design of improved auditory prosthetic devices) as well as because it will improve basic understanding of the role of plasticity and dynamic processes in

auditory processing. The second goal of this proposal is to further develop the existing collaboration between the Auditory Neuroscience Laboratory (ANL) at Boston University (BU) and the newly established Perception and Cognition Laboratory (PCL) at the Technical University of Kosice, Slovakia (TUK).

- **DNA-CT - Fluorescent image analysis of irregularly shaped cells for purposes of non-destructive DNA quantification**, Slovak Research and Development Agency Project, No. APVV-0682-07, members: Iveta Zolotová (project leader for DCAI group), Peter Karch, Vladimír Jeleň, Oľga Duřová, Zoltán Tomori (project leader of whole project from group of Institute of Experimental Physics SAS Košice), Marek Dudáš (project leader of group of Safarik University of Kosice), duration: 2008-2010. Activity: Adaptation of microscope for capturing of immobilized sperm cell images under different angles of view. Design of 3D mathematical model adjusting the acquired image with respect to both the angle of cell rotation and the physical conditions during acquisition. Statistical comparison of DNA contents values obtained under different condition.
- **Cognitive science – Middle European cross-disciplinary master study program**, Cultural and Educational Grant Agency project No. 3/7300/09, duration: 2009-2011, members: Norbert Kopčo, Beata Tomoriová; Jan Rybár, Igor Farkaš, Comenius University Bratislava, Peter Sýkora, University of Constantine and Methodus, Trnava activity: Creation of a joint interdisciplinary Masters program of Cognitive science in collaboration with universities in the central-European region (Vienna, Budapest, Ljubljana, Zagreb).
- **Auditory perception of space and loudness in real environments** – Human Frontiers Science Program ST-00080 / 2008-C – Nov 2008-Jan 2009. PI Norbert Kopčo. Collaborator: Simon Carlile, University of Sydney. A series of behavioral and modeling studies is proposed with the goal of improving our understanding of 1) how normal-hearing humans localize speech sources in realistic complex environments consisting of other speech sources, and 2) how this ability relates to the ability to use spatial attention to enhance understanding of the speech of one of multiple talkers. The results will be important for bridging the gap between our understanding of the basic parameters that influence performance in simple laboratory experiments and behavior in complex every-day situations.
- **Perceptual, Contextual, and Cross-Modal Learning in Hearing and Vision**. Slovak Research and Development Agency Project, No. PP7RP-0027-09. PI Norbert Kopčo, staff Rudolf Andoga, Beata Tomoriová. Reimbursement grant for the costs of grant preparation for successful applicants for EU research grants.
- **Crossmodal influences in perceptual learning** – National Stipend Program for support of mobility. Grantee Norbert Kopčo. Collaborator: Aaron Seitz, University of California in Riverside. Research on crossmodal effects in perceptual learning, focused on auditory distance perception.
- **Centrum of information and communication technologies for knowledge-based systems**, project No. 26220120020 supported by the Research & Development Operational Programme funded by the ERDF, duration: 2009 - 2011.

6 **CO-OPERATION**

6.1. **Co-operation in Slovakia**

- Department of Automatic Control Systems Bratislava, Slovak University of Technology, Bratislava
- Institute of Intelligent Systems, Faculty of Informatics, Slovak University of Technology, Bratislava
- Institute of Computer Science, Slovak Academy of Sciences in Bratislava
- Department of Biophysics IEP Slovak Academy of Science
- Institute of Computer Science, University of P.J. Šafárik, Košice
- Economic University, Faculty of Business Economics, Košice
- Institute of Experimental Physics, Slovak Academy of Sciences
- Department of applied informatics (Centre for Cognitive Science), Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava
- Košice self-governing region
- Local Authority City Ward Ťahanovce, Košice
- The City of Košice
- Tatrabanka, a.s.
- IT Valley Kosice

6.2. **International Co-operation**

- The Open University, Knowledge Media Institute, United Kingdom
- University of Vaasa, Finland
- Helsinki University of Technology, Dipoli, Finland
- Department of Software Engineering and Interactive Systems, Vienna University of Technology, Austria
- University of Regensburg, Germany
- Hearing Research Center and Dept. of Cognitive and Neural Systems, Boston University, USA
- Center for Cognitive Neuroscience and Department of Psychology, Duke University
- Institute of Pathological Physiology, 1st Faculty of Medicine, Charles University, Prague
- Budapest Computational Neuroscience Group, Department of Biophysics, Hungarian Academy of Sciences
- Department of Psychology, University of California at Riverside
- University of Dortmund, Germany
- Waseda University, Tokyo, Japan
- Technical University of Czestochowa
- Tokyo Institute of Technology, Japan
- Kyushu Institute of Technology, Japan
- Université Joseph Fourier Grenoble, IUT 1 (Institut Universitaire de Technologie 1), Grenoble, France
- Heudiasyc UMR CNRS 6599, UTC, Compiègne, France
- Université Henri Poincaré, Laboratoire CRAN (Centre de Recherche en Automatique de Nancy), Nancy 1, France
- Department of Informatics, Technical University, Ostrava, Czech Republic
- Department of Control Systems and Instrumentation, Faculty of Mechanical Engineering Technical University of Ostrava, Czech Republic

- Department of Cybernetics, Czech Technical University Prague, Czech Republic
- Department of Control Engineering, Czech Technical University, Prague, Czech Republic
- Institute of Information Theory and Automation, Academy of Sciences of Czech Republic, Prague, Czech Republic
- Department of Information Engineering, Faculty of Economics and Management, Czech University of Agriculture, Prague, Czech Republic
- University of Hradec Králové, Czech Republic
- Faculty of Mechanical Engineering, Department of Automation, Institute of Information, University of Miskolc, Hungary
- Óbuda University, Budapest, Hungary
- Budapest University of Technology and Economics, Hungary
- California Institute of Technology, Jet Propulsion Laboratory (Dr. Antal, K. Bejczy), USA, California
- Hungarian Academy of Sciences, Computer and Automation Research Institute, Hungary (prof. Gyorgy Kovács)
- Regional Association of the Hungarian Academy of Sciences, Miskolc, Hungary
- Austrian Academy of Sciences, Acoustics Research Institute (Bernhard Laback)
- Auditory Neuroscience Group, Department of Physiology, University of Sydney

6.2.1. Visits of Staff Members to Foreign Institutions

- Kopčo, N: Boston University, Duke University, University of Sydney, University of Oldenburg, Charles University, Austrian Academy of Sciences
- Lukáč, G.: University of Regensburg, Germany
- Mach, M.: University of Regensburg, Germany
- Mach, M.: Infineon Technologies IT-Services, Klagenfurt, Austria
- Wagner, J.: Laboratoire de Recherche en Informatique, Paris, France
- Ocelíková, E.: Dept. of Control Engineering, Czech Technical University, Prague
- Paralič J. and Wagner, J.,: Institute of Computer Science, Heraklion, Greece
- Paralič J. and Wagner, J.,: InterMedia, Oslo, Norway
- Vaščák, J.: University Hradec Kralove, Czech Republic

6.3. Membership in International Organizations and Societies

- Jakša, R.: IEEE, Computational Intelligence Society
- Kopčo, N.: Association for Research in Otolaryngology, Acoustical Society of America, Society for Neuroscience
- Krokavec, D.: Member of the International Federation of Automatic Control IFAC Technical Committee TC 1.4 Stochastic Systems
- Liguš, J.: EAEEIE – European Association for Education in Electrical and Information Engineering
- Madarász, L.: Doctor honoris causa, University of Miskolc (2009)
- Madarász, L.: Honorary professor, Óbuda University Budapest, Hungary (2009)
- Madarász, L.: Honorary Member of the Board of Hungarian Academy of

- Sciences (2000)
- Madarász, L.: Chairmanship member of the Technical Section, Association of Hungarian Professors (2001)
- Madarász, L.: Honorary Professor, Bánky Donát Polytechnic, Budapest, Hungary (1999)
- Madarász, L.: Membership of Associate Editors, Acta Polytechnica Hungarica, Budapest Tech, Hungary (2004)
- Madarász, L.: Honorary Membership in Hungarian Fuzzy Association, Budapest Hungary (2002)
- Madarász, L.: American Biographical Institute, Gold Record of Achievement, Control of Large Scale Systems, USA (1997)
- Madarász, L.: The American Biographical Institute, The Research Board of Advisors (1996)
- Madarász, L.: Honorary Fellow of microCAD The University of Miskolc (2005)
- Ocelíková, E.; Sinčák, P.; Zolotová, I.: CPRS - Czech Pattern Recognition Society
- Ocelíková, E.: CSSS - Czech and Slovak Society for Simulation
- Machová, K.: ACM – Association of Computer Machinery
- Paralič, J.: ACM – Association of Computer Machinery, IEEE
- Sabol, T.: Information Society Technologies Program Committee (IST PC), 5th Framework Program, Brussels
- Sarnovský, J.: IEEE
- Sarnovský, J.: INES - International Network of Engineers and Scientists for Global Responsibility
- Sarnovský, J.: Principia Cybernetica Web PRNCYB-L
- Sarnovský, J.: SWIIS - Supplementary Ways for Improving International Stability
- Sinčák P.: European Society of Neural Networks
- Sinčák P.: IEEE, Computational Intelligence Society
- Vaščák, J.: IEEE, Computational Intelligence Society
- Zolotová, I.: IEEE, Education Society

6.4. Membership in Slovak Organizations and Societies

- The whole Department of Cybernetics and Artificial Intelligence is a team member of:
 - Slovak Society for Cybernetics and Informatics
 - Slovak AI Society
- Filasová, A.: Slovak Society for Cybernetics and Informatics
- Krokavec, D.: Slovak Electrical Engineering Society
- Krokavec, D.: Scientific Grant Agency of Slovak Republic
- Krokavec, D.: Member of the Editorial Board of the Journal AT&P, Bratislava
- Madarász, L.: Member of the Editorial Board of the Journal AT&P, Bratislava
- Madarász, L.: Slovak Society for Cybernetics and Informatics
- Madarász, L.: Member of the Editorial Board of the Journal Transfer Inovácií, Faculty of Mechanical Engineering (2006)
- Madarász, L.: Member of the Editorial Board of the Acta Polytechnica Hungarica, Budapest Tech, Hungary (2006)
- Jadlovská, A; Ocelíková, E.; Sarnovský, J.: Slovak Society for Cybernetics and Informatics

- Paralič, J.: Slovak Society for Computer Science
- Sabol, T.: Board of the Open Society Fund, Bratislava
- Zolotová, I.: Slovak Research and Development Agency

6.5. International Networks and Exchange Programs

- EIE-Surveyor, REFERENCE POINT FOR ELECTRICAL AND INFORMATION ENGINEERING IN EUROPE, Project Nr. 225997-CP-1-2005-1-FR-ERASMUS-TNPP, Project funded by the European Commission (SOCRATES Thematic Network), Contact person: Ján Liguš
- Socrates - Erasmus agreement between TU of Košice and University Hradec Kralove, Czech Republic. Contact person: Ján Vaščák
- Socrates - Erasmus agreement between FEI TUKE and Escola Universitaria Salesiana de Sarria Universitat Autonoma de Barcelona, Spain. Contact person: Iveta Zolotová
- Socrates - Erasmus agreement between TU of Košice and Czech University of Agriculture, Prague, Czech Republic. Contact person: Eva Ocelíková

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	92	79	5

8 OTHER ACTIVITIES

- 7th Slovak – Hungarian Joint Symposium on applied Machine Intelligence (SAMI 2009 - <http://www.sami.tuke.sk/2009>) has been organized in Herľany, Slovakia, January 29-31
- 4th Workshop on Intelligent and Knowledge oriented Technologies (WIKT 2009) has been organized in Herľany, Slovakia, November 12-13
- 9th International Student Workshop on Data Analysis (WDA 2009) has been organized in Čertovica, Slovakia, July 2-4

9 PUBLICATIONS

9.1. Books

- [1] BABIČ, František - PARALIČ, Ján: WIKT 2009: 4th Workshop on Intelligent and Knowledge oriented Technologies: Proceedings: November 12 - 13, 2009, Herľany, Slovakia. 1. vyd. Košice: Equilibria, 2009. 115 s. ISBN 978-80-89284-42-9.
- [2] BABIČ, František - PARALIČ, Ján - RAUBER, Andreas: WDA 2009: Workshop on Data Analysis: Proceedings of the 9th International Student Workshop: Čertovica (Low Tatras), Slovakia, July 2 - 4, 2009. 1. vyd. Košice: EQUILIBRIA, 2009. 105 s. ISBN 978-80-89284-41-2.
- [3] DUDÁŠ, M., HLINKA, D. DANKOVČÍK, R. and TOMORI, Z.: "Kombinace nových experimentálních a bioinformatických postupů při zdokonalování metod předimplantační genetické diagnostiky," in Reprodukční medicína - současnost a perspektivy, A. Ostró, L. Pilka, and F. Lešník, Eds. Olomouc: Nakladatelství Olomouc, 2009, pp. 176-194.

- [4] MACH, M.: Evolutionary algorithms: elements and principles. Elfa, Kosice, 2009, 250 pages, ISBN 978-80-8086-123-0.
- [5] MACHOVÁ, Kristína: Strojové učenie v systémoch spracovania informácií. Elfa, Košice, 2009, 85s., ISBN 978-80-8086-130-8
- [6] PIETRIKOVÁ, Alena - KOVÁCS, Attila N. - MODROVIČOVÁ, Jana: SCYR 2009: 9th Scientific Conference of Young Researchers: Proceedings from Conference: May 13th, 2009, Košice, Slovakia. 1. vyd. Košice: TU, 2009. 279 s. ISBN 978-80-553-0178-5.
- [7] TOMORI Z. - DUDÁŠ, M.: "Využití moderní přístrojové a výpočetní techniky při selekci spermii," in Reprodukční medicína - současnost a perspektivy, A. Ostró, L. Pilka, and F. Lešník, Eds. Olomouc: Nakladatelství Olomouc, 2009, pp. 80-87.

9.2. Journals

- [1] ANDOGA, Rudolf - FOZO, Ladislav - MADARÁSZ, Ladislav: Intelligent fade control systems of turbojet engines. In: Acta Avionica. roč. 11, č. 18 (2009), s. 7-11. ISSN 1335-9479.
- [2] BABIČ, František et al. : Knowledge practices laboratory. In: Ambient Intelligence Perspectives: Ambient Intelligence and Smart Environments : Selected papers from the First International Ambient Intelligence Forum 2008. vol. 1 (2009), p. 42-49. ISSN 1875-4163.
- [3] BABIČ, František et al. : Use of semantic principles in a collaborative system in order to support effective information retrieval. In: Computational Collective Intelligence. vol. 5796 (2009), p. 365-376. ISBN 978-3642-04440-3 ISSN 0302-9743.
- [4] BRUNO, Giuseppe - JANCUROVÁ, Lucia: Heavy flavours in ALICE. In: Journal of Physics G: Nuclear and Particle Physics. vol. 36, no. 6 (2009), p. 1-7. ISSN 0954-3899.
- [5] FURDÍK, Karol - MACH, Marián - SABOL, Tomáš: Towards semantic modelling of business processes for networked enterprises. In: E-Commerce and Web Technologies. vol. 5692 (2009), p. 96-107. ISSN 0302-9743.
- [6] GALDUN, Ján - THIRIET, Jean-Marc - LIGUŠ, Ján: Study of different load dependencies among shared redundant systems. In: Scalable Computing: Practice and Experience. vol. 10, no. 3 (2009), p. 241-252. ISSN 1895-1767.
- [7] HLÁDEK, Daniel - VAŠČÁK, Ján - SINČÁK, Peter: Multi-robot control system for pursuit-evasion problem. In: Journal of Electrical Engineering. roč. 60, č. 3 (2009), s. 143-148. ISSN 1335-3632.
- [8] KABÁT, Ján et al. : Magnetic diagnostic of a small-size jet engine initial magnetic measurements. In: Acta Avionica. roč. 11, č. 17 (2009), s. 29-33. ISSN 1335-9479.
- [9] KABÁT, Ján - LAZAR, Tobiáš - MADARÁSZ, Ladislav: Magnetic aura in the operational diagnostics of a jet engine (JE). In: Acta Avionica. roč. 11, č. 17 (2009), s. 26-28. ISSN 1335-9479.
- [10] KOPČO, Norbert - BEST, Virginia - CARLILE, Simon: Localizing a speech target in a multitalker mixture. In: Journal of the Acoustical Society of America. vol. 125, no. 4 (2009), p. 2691. ISSN 0001-4966.
- [11] KOPČO, Norbert et al. : Reference frame of the ventriloquism aftereffect. In: The Journal of Neuroscience. vol. 29, no. 44 (2009), p. 13809-13814. ISSN 0270-6474.
- [12] KOSTELNÍK, Peter - SABOL, Tomáš - MACH, Marián: Applications of semantic technologies in Aml. In: Ambient Intelligence Perspectives : Ambient

- Intelligence and Smart Environments : Selected papers from the First International Ambient Intelligence Forum 2008. vol. 1 (2009), p. 8-24. ISSN 1875-4163.
- [13] MADARÁSZ, Ladislav et al. : Situational control, modeling and diagnostics of large scale systems. In: Towards Intelligent Engineering and Information Technology. no. 143 (2009), p. 153-164. ISSN 1860-949X.
- [14] MACHOVÁ, Kristína - VRANA, Jozef - DŽBOR, Martin: Some approaches to make the internet searching easier. In: Ambient Intelligence Perspectives. vol. 1, no. 1 (2009), p. 166-173. ISSN 1875-4163.
- [15] MACHOVÁ, Kristína - GAL'OVÁ, Lenka: The particular mapping of the nearest surroundings graph of the actual web page. In: Journal of Information and Organizational Sciences. vol. 33, no. 1 (2009), p. 151-163. ISSN 1846-3312.
- [16] NÁVRAT, Pavol - PARALIČ, Ján: Acquiring, organising and presenting information and knowledge on the web. In: Computing and Informatics. roč. 28, č. 4 (2009), s. 393-398. ISSN 1335-9150.
- [17] PARALIČ, Ján et al. : Analyses of knowledge creation processes based on different types of monitored data. In: Foundation of Intelligent Systems. vol. 5722 (2009), p. 321-330. ISBN 978-3642-04124-2 ISSN 1867-8211.
- [18] REIFF, Tomas - SINČÁK, Peter: Towards intelligent systems with incremental learning ability. In: Studies in Computational Intelligence. vol. 243 (2009), p. 627-638. ISSN 1860-949X.
- [19] SARNOVSKÝ, Ján: On Governors. In: AT&P Journal. roč. 16, č. 2 (2009), s. 13. ISSN 1335-2237.
- [20] SARNOVSKÝ, Ján: Kyberokracia. In: AT&P Journal. roč. 16, č. 5 (2009), s. 7. ISSN 1335-2237.
- [21] SARNOVSKÝ, Ján: Matematika v študijných programoch. In: AT&P journal : Priemyselná automatizácia a informatika. roč. 16, č. 8 (2009), 1 s. ISSN 1335-2237.
- [22] VAŠČÁK, Ján - RUTRICH, Martin: Siete Neural Gas pri navigácii v cestných sieťach (2). In: AT&P Journal. č. 1 (2009), s. 53-54. ISSN 1335-2237.
- [23] VAŠČÁK, Ján - RUTRICH, Martin: Siete Neural Gas pri navigácii v cestných sieťach (3). In: AT&P Journal. č. 2 (2009), s. 65-67. ISSN 1335-2237.

9.3. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	27	51	0

DEPARTMENT OF MATHEMATICS

<http://www.tuke.sk/fei-km/index.htm>
Tel.: ++421 55 602 3250, Fax: ++421 55 633 0115

Head of Department
doc. RNDr. Ján Plavka, CSc.
E-mail: Jan.Plavka@tuke.sk



1 DEPARTMENT'S PROFILE

Department of Mathematics, before 1981 Department of Mathematical Informatics, was founded in 1969. The activities of twenty teachers are oriented to the mathematical research and education. The main educational goal is to prepare undergraduate students during the first two years of study in the following courses: Differential and integral calculus; Theory of complex variable functions; Ordinary differential equations; Qualitative theory of differential equations; Linear algebra; Mathematical statistics; Laplace, Fourier, and Z-Transformations; Numerical methods; Discrete mathematics and Mathematical modelling, Coding theory, Algorithms and complexity. In addition to the basic courses, the programs of the courses for graduate study were adjusted in co-operation with special departments. Members of the department prepared new lectures on various topics of applied mathematics for graduate study and for PhD students, such as Algorithms and complexity, Theory of queues, Fuzzy sets, Selected topics from mathematics, Financial mathematics, Optimization methods, Solving ill-posed problems. Since 2008 the Department offers its own study programme Computer modelling. This is focused on computer-aided mathematical simulation of diverse problems.

Present research projects of the Department of Mathematics are oriented on the next problems:

- Asymptotic properties of higher order functional differential equations
- The study of the scaling laws in nonlinear systems and in the developed turbulence using renormalization group methods
- Algebraic structures and graph algorithms in max-plus and max-min algebras
- Topological graph theory – crossing numbers of graphs
- E-learning of mathematical subjects



2 STAFF

Professors: prof. RNDr. Jozef Džurina, CSc.

Associate Professors: doc. RNDr. Alexander Haščák, CSc.
doc. RNDr. Marián Klešč, PhD.
doc. RNDr. Ján Plavka, CSc.
doc. RNDr. Viktor Pirč, CSc.

Assistant Professors: RNDr. Blanka Baculíková, PhD.
RNDr. Štefan Berežný, PhD.
RNDr. Ján Buša, CSc.
Mgr. Ján Buša, PhD.
RNDr. Ivan Daňo, PhD.
RNDr. Emília Draženská, PhD.
RNDr. Anna Grinčová, PhD.
RNDr. Jozef Kondáš
RNDr. Renáta Komariková, PhD. (Kotorová)
RNDr. Marcel Kudláč
Mgr. Daniela Kravecová
RNDr. Monika Molnárová, PhD.
RNDr. Helena Myšková, PhD.
PhDr. Eva Ostertagová, PhD.
Mgr. Ján Pribiš, PhD.
RNDr. Štefan Schrötter, CSc.

Technical Staff: Mária Schrötterová

The Department consists of two parts:

- Division of Mathematical Analysis and Discrete Mathematics
- Division of Applied Mathematics

3 LABORATORIES

- Laboratory of Mathematical and Computing Modelling

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Mathematics I.	1 st	3/3	Buša, Džurina, Klešč, Daňo, Baculíková
Mathematics I.	1 st	4/3	Molnárová, Grinčová
Mathematics I. (English)	1 st	3/3	Berežný
Mathematics I.	1 st	2/0	Pirč
Continuous Optimization Methods	2 nd	3/3	Džurina
Mathematics II.	2 nd	2/2	Molnárová
Numerical Methods	2 nd	2/0	Berežný
Graph Algorithms and Discrete	2 nd	2/2	Klešč

Optimization			
Mathematical Logic	2 nd	2/0	Draženská
Algorithms and Complexity	2 nd	2/2	Plavka
Discrete Mathematics I.	2 nd	3/3	Schrötter
Mathematics II.	2 nd	3/3	Ostertagová
Operation Analysis	2 nd	2/2	Berežný
Mathematics II.	3 rd	3/3	Schrötter, Pribiš, Ostertagová
Mathematics II. (English)	3 rd	3/3	Plavka
Mathematics II.	3 rd	2/0	Komariková
Theory of Coding	3 rd	2/2	Plavka
Mathematical Logic	3 rd	3/2	Draženská, Myšková
Typographical System TEX	3 rd	0/2	Buša
Discrete Mathematics and Logic	3 rd	2/0	Schrötter
Computer-aided Mathematical Simulation	5 th	3/2	Džurina
Financial Mathematics	6 th	2/2	Pirč
Financial Mathematics	6 th	2/0	Baculíková

4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Differential Equations and Variational Calculus	7 th	2/2	Džurina
Applied Mathematics	7 th	3/2	Klešč
Theory of Coding	7 th	2/2	Plavka
Selected Topics on Mathematics	7 th	3/3	Pirč
Applied Mathematics	7 th	2/2	Buša

5 RESEARCH PROJECTS

- **Crossing numbers of selected families of graphs**, VEGA Slovak Grant Agency No. 1/0636/08, duration 2008-2010, co-ordinator: Marián Klešč.
- **Simulation of protein folding**, VEGA Slovak Grant Agency No. 1/0819/08, duration 2008-2010, co-ordinator: Ján Buša.
- **Two textbooks for first and second level for study program Computer Modelling**. KEGA Slovak Grant Agency No. 3/7353/09, duration 2009-2011, co-ordinator Ivan Daňo.

6 CO-OPERATION

6.1. Co-operation in Slovakia

The members of department work in the main research projects described above and they are involved in research projects at other institutions:

- Faculty of Science UPJŠ, Košice
- Faculty of Mathematics, Physics and Informatics UK, Bratislava
- Special Departments of FEI TU, Košice
- Institute of Experimental Physics of Slovak Academy of Sciences, Košice
- Faculty of Natural Science, Žilina

6.1.1. Visitors to the Department

- Dr. Edik Hayryan, Joint Institute for Nuclear Research, Dubna, Russia
- Dr. Alexander Ayriyan, Joint Institute for Nuclear Research, Dubna, Russia

6.2. International Co-operation

- Technical University in Graz, Austria
- Charles University in Prague, Czech Republic
- Masaryk University in Brno, Czech Republic
- University of Birmingham, United Kingdom
- UHK in Hradec Králové, Czech Republic
- Ioaninna University, Greece
- Veszprem University, Hungary
- JINR Dubna, Russia
- Institute of Physics, Academia Sinica, Taiwan
- Research Center JÜLICH, Germany

6.2.1. Visits of Staff Members to Foreign Institutions

- Berežný, Š.: North University of Baia Mare, Romania
- Berežný, Š.: ČVUT, Prague, Czech Republic
- Molnárová, M.: UHK Hradec Králove, Czech Republic

6.3. Membership in International Organizations and Societies

- Haščák, A.: American Mathematical Society
- Klešč, M.: American Mathematical Society

6.4. Membership in Slovak Organizations and Societies

- Baculíková, B.: Slovak Mathematical Society
- Buša, J.: Slovak Mathematical Society
- Buša, J.: Czechoslovak TeX Users Group (CSTUG)
- Buša, J.: Slovak Committee for the Cooperation of the Slovak Republic with JINR, Dubna
- Daňo, I.: Slovak Mathematical Society
- Džurina, J.: Slovak Mathematical Society
- Grinčová, A.: Slovak Mathematical Society
- Haščák, A.: Slovak Mathematical Society
- Klešč, M.: OK 9-1-6 Discrete Mathematics
- Klešč, M.: Slovak Mathematical Society
- Kravecová, D.: Slovak Mathematical Society
- Molnárová, M.: Slovak Mathematical Society
- Pirč, V.: Slovak Mathematical Society
- Plavka, J.: OK 9-1-6 Discrete Mathematics
- Schrötter, Š.: Slovak Mathematical Society

6.5. Contracts, International Scientific Projects

- CEEPUS – partner in CEEPUS II program CII-HU-0028-03-0910/M/35079 - Active Methods in Teaching and Learning Mathematics

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	0	0	4

8 OTHER ACTIVITIES

8.1 Workshops:

- Buša, J. – Schrötter, Š.: 10-th Conference of Košice Mathematicians, April 2009, Herľany, co-organisers
- Schrötter, Š.: Workshop Cycles and Colourings, Tatranská Štrba, September 2009, co-organiser

8.2 Study tours:

- Buša, J.: JINR Dubna, Russia
- Pribiš, J.: JINR Dubna, Russia

9 PUBLICATIONS

9.1. Books

- [1] BACULÍKOVÁ, Blanka - GRINČOVÁ, Anna: Matematika 1 v príkladoch. 1. vyd. Košice, Elfa, 2009. 126 s. ISBN 978-80-8086-120-9.
- [2] DAŇO, Ivan - OSTERTAGOVÁ, Eva: Numerické metódy, pravdepodobnosť a matematická štatistika v počítačovom prostredí MATLABu. Elfa Košice, 2009, 102 s., ISBN 978-80-8086-111-7.
- [3] DŽURINA, Jozef - GRINČOVÁ, Anna - PIRČ, Viktor: Matematika 1. 1. vyd. Košice: Elfa, 2009, 110 s. ISBN 978-80-8086-115-5.
- [4] DŽURINA, J., PIRČ, V.: Diferenciálne rovnice, diferenčné rovnice a variačný počet, 2009, ISBN 978-80-553-0263-8.
- [5] GRINČOVÁ, A., IŽARÍKOVÁ, G., PIRČ, V.: Časové rady, 2009, ISBN 978-80-553-0293-5.

9.2. Journals

- [1] BEREŽNÝ, Š. – ANDREJKOVIČ, M.: Statistical processing of flights on Košice airport. In: Acta Avionica. Vol. 11, no. 2 (2009), p. 9-14.
- [2] BEREŽNÝ, Š. – GRINČOVÁ, A.: Matematické modely správaní sa dopravných pásov. In: Science & military. Vol. 4, no. 1 (2009), p. 5-9.
- [3] BUŠA, J. – HAYRYAN, S. – HU, Ch-K. – SKŘIVÁNEK, J. – WU, M-K.: Enveloping triangulation method for detecting internal cavities in proteins and algorithm for computing their surface areas and volumes. In: Journal of Computational Chemistry. Vol. 30, no. 3 (2009), p. 346-357.
- [4] BUŠA, J. – HAYRYAN, E. – JURČIŠINOVÁ, E. – JURČIŠIN, M. – REMECKÝ, R.: Numerical investigation of renormalization group equations in a model of advected vector field by anisotropic stochastic environment. In: Bulletin of the peoples' friendship University of Russia. no. 4 (2009), p. 25-33.
- [5] DŽURINA, J. – KOTOROVÁ, R.: Asymptotic properties of trinomial delay differential equations. In: Tatra Mountains J. Vol. 43 (2009), p. 71- 80.
- [6] DŽURINA, J. – KOTOROVÁ, R.: Properties of the third order trinomial

- differential equations with delay argument. In: Nonlinear analysis, Theory, Methods & Applications. Vol. 71(2009) 1995-2002.
- [7] DŽURINA, J. – KOTOROVÁ, R.: Comparison theorems for the third order trinomial differential equations with delay arguments. In: Czech. Math. J. Vol. 59 (2009) p. 353-370.
- [8] DŽURINA, J. – LACKOVÁ, D.: Oscillation of the second order neutral delay differential equation. In: Math. Bohemica. Vol. 134 (2009), p. 31-38.
- [9] DRAŽENSKÁ, E. – KLEŠČ, M.: The crossing numbers of products of the graph $K_2, 2, 2$ with stars. In: Carpatian Journal of Mathematics. Vol. 24, no. 3 (2008) p. 327-331. (Published 2009.)
- [10] GAVALEC, M. – PLAVKA, J.: Structure and dimension of the eigenspace of a concave Monge matrix. In: Discrete Applied Mathematics. Vol. 157, no. 4 (2009), p. 768-773.
- [11] GAVALEC, M. – PLAVKA, J.: The computing procedure for the multiparametric eigenproblem in max algebra. In: Acta Electrotechnica et Informatica. Vol. 9, no. 2 (2009) 24-29.
- [12] GRINČOVÁ, A. – BEREŽNÝ, Š. – HAJDUOVÁ, Z.: On the possibilities of evaluating breakdown conveyer belt tests and measurement process methodology optimization. In: Annals of Faculty of Engineering Hunedoara. Vol. 7, no. 1 (2009), p. 73-78.
- [13] GRINČOVÁ, A. – BEREŽNÝ, Š. – MARASOVÁ, D.: Tvorba regresného modelu na základe experimentálnych skúšok dopravných pásov proti prierazu. In: Acta Montanistica Slovaca. Vol. 14, no. 1 (2009) p. 113-120.
- [14] KLEŠČ, M.: On the crossing numbers of Cartesian products of stars and graphs on five vertices. In: Combinatorial Algorithms – LNCS 5874. Springer-Verlag Berlin Heidelberg 2009, p. 324-333.
- [15] KLEŠČ, M. – KRAVECOVÁ, D.: The crossing number of $P_{25} \times C_n$. In: Creative Mathematics and Informatics. Vol. 17, no. 3 (2008) p. 431-438. (Published 2009.)
- [16] KOSTENKO, B. F. – PRIBIŠ, J. – YURIEV, M.Z.: Quantum elastic net and the traveling salesman problem. In: Physics of Particles and Nuclei Letters. Vol. 6, no. 7 (2009) p. 1-6.
- [17] KOVÁČ, J. – OSTERTAGOVÁ, E.: Projektovanie montážnych systémov na báze využívania morfolologickej analýzy. Výrobné Inžinierstvo. Vol. 3 (2009) p. 75-77.
- [18] OSTERTAGOVÁ, E.: Aplikácia MATLABu pri riešení niektorých úloh korelačnej a regresnej analýzy. Transfer inovácií. Vol. 13 (2009) p. 200-202.

9.3. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	17	20	2

DEPARTMENT OF COMPUTERS AND INFORMATICS

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Head of Department
prof. Ing. Ján Kollár, CSc.
E-mail: Jan.Kollar@tuke.sk



1 DEPARTMENT'S PROFILE

Department of Computers and Informatics (DCI) has been a principal body of the Faculty of Electrical Engineering and Informatics (FEI) conducting the process of education and scientific research in the area of Computer science and engineering (CSE) since 1989. DCI is one of two successors of the former Department of Technical Cybernetics at the FEI.

Education at DCI covers all forms of university studies in CSE and DCI grants bachelor (Bc), master (Ing) and doctoral (PhD) degree in CSE.

DCI consists of 5 laboratories:

- Informatics and Computer Languages Laboratory
- Software Engineering Laboratory
- Information Systems Laboratory
- Computer Networks Laboratory
- Computer Architectures and Security Laboratory



DCI programs enrollment counts more than 560 students in bachelor and 230 students in master programs. Number of doctoral students studying towards PhD degree is more than 40.

The graduates can work as system engineers, specialists for development, installation and maintenance of the information systems and technologies in wide spectrum of applications, designers of the computer systems, specialists dealing with research, development and operation of computer systems and their components.

Scientific research at DCI covers following fields:

- formal methods for design and analysis of discrete systems,
- programming paradigms and theory of programming,
- parallel and distributed programming, real time systems,
- methods, tools and methodologies of analysis and design of software systems,
- computer graphics and virtual reality systems,
- agent and service-based technologies for design and implementation of distributed software systems,
- modeling and simulation of systems,
- advanced database and information technologies,
- information systems security,
- e-learning systems, intelligent tutoring systems,
- parallel architectures for specialized high performance computer systems,
- theory of design of MIMD computer architecture - data-flow,
- computer networks and advanced network infrastructures,
- transfer of the multimedia nature information with the required quality of services parameters, effective methods of quality service property parameters assessment,
- implementation of the powerful streaming technologies in the IP network environment,
- videoconference solution and voice services of the new generation,
- monitoring, control and visualization of topologies in LAN and WAN,
- virtual communication infrastructures and their use in practical, e-learning technologies and their solutions.

2 **STAFF**

Professors:

prof. Ing. Štefan Hudák, DrSc.
prof. Ing. Ján Kollár, CSc.
prof. RNDr. Valerie Novitzka, PhD.
prof. Ing. Liberios Vokorokos, PhD.

Associate Professors:

doc. Ing. Ján Bača, CSc.
doc. Ing. Zdeněk Havlice, CSc.
doc. Ing. František Jakab, PhD.
doc. Ing. Jaroslav Porubän, PhD.
doc. Ing. Branislav Sobota, PhD.
doc. Ing. Milan Šujanský, CSc.

Assistant Professors: Ing. Norbert Ádám, PhD. Ing. Ján Perháč, PhD.
Ing. Anton Baláž, PhD. Ing. Ondrej Pločica
Ing. Peter Feciľák, PhD. Ing. Igor Sivý, CSc.
Ing. Michal Forgáč, PhD. Ing. Viliam Slodičák, PhD.
Ing. Ján Genči, PhD. Ing. Slavomír Šimoňák, PhD.
Ing. Juraj Giertl, PhD. Ing. Stanislav Šuba
Ing. Milan Hauliš Ing. Henrieta Telepovská, PhD.
Ing. Katarína Kleinová Ing. Martin Tomášek, PhD.
Ing. Štefan Korečko, PhD. Ing. Peter Václavík, PhD.
Ing. Marek Paralič, PhD.

Senior Scientists: Ing. Miroslav Biňas Ing. Daniel Mihályi
Ing. Michal Kohut Ing. Ladislav Samuelis, CSc.
Ing. Martin Révész Ing. Csaba Szabó, PhD.

Technical Staff: Karol Hobor Emília Sjdárová
Roman Ivančík Helena Švarcová
Jozef Šefčík

Ph.D. Students:
Internal form:

Ing. Iveta Adamuščinová Ing. Martina Laľová
Ing. Michal Augustín Ing. Branislav Madoš
Ing. Peter Bratrú Ing. Miroslav Michalko
Ing. Eva Danková Ing. Marián Mižík
Ing. Marek Domiter Ing. Marek Novák
Ing. Peter Feciľák Ing. Ján Perháč
Ing. Michal Forgáč Ing. Tomáš Poklemba
Ing. František Hrozek Ing. Miroslav Sabo
Ing. Róbert Hužvár Ing. Ivan Šestina
Ing. Sergej Chodarev Ing. Anita Verbová
Ing. Peter Jakubčo Ing. Milan Vrábel
Ing. Jozef Janitor Ing. Ľubomír Wassermann
Ing. Martin Kapa Ing. Wasim Zahra
Ing. Attila N. Kovács Ing. Peter Žársky
Ing. Ján Kunštár

External form:

Ing. Gabriel Bocek Ing. Miloš Očkay
Ing. Ľuboš Dúbravec Ing. Ivan Peňko
Ing. Martin Droppa Ing. Igor Petz
Ing. Vratislav Fabián Ing. Ondrej Pločica
Ing. Milan Hauliš Ing. Peter Prazňák
Ing. Radovan Janošo Ing. Kristián Šesták
Ing. Marián Jenčík Ing. Peter Špireng
Ing. Peter Klobušník Ing. Stanislav Šuba
Ing. Michal Kohut Ing. Michal Vagač
Ing. Ľubomír Kulich Ing. Milan Varga
Ing. Ivan Makatura Ing. Juraj Vízi
Ing. Matej Lakatoš Ing. Marek Výrost
Ing. Daniel Mihályi Ing. Otto Železník
Ing. František Mrázik Ing. Marián Želinský

3 LABORATORIES

- *Computer Networks Laboratory (www.cnl.tuke.sk)*
- *Computer Architectures and Security Laboratory*
- *Operation Systems Laboratory*
- *Software Engineering Laboratory*
- *Information Systems Laboratory*
- *Informatics and Computer Languages Laboratory*
- *Administration and Operational Support*

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures / exercises (hours per week)	Name of Lecturer
Introduction to programming and networks	1 st	3/2	Novitzká, Paralič, Sobota
Assembler	1 st	2/2	Šimoňák
Principles of computer engineering	2 nd	2/2	Vokorokos
Programming	2 nd	3/2	Havlice, Paralič, Tomášek, Václavík
Operating Systems	3 rd	2/2	Sivý
Functional programming	3 rd	2/2	Kollár, Václavík
Theoretical Foundations of Informatics	3 rd	2/2	Hudák, Tomášek
OS Linux administration I.	3 rd	0/2	Biňas
Object-Oriented Programming	4 th	2/2	Havlice, Tomášek
Data structures and algorithms	4 th	2/2	Šimoňák
Computer Networks	4 th	2/2	Jakab
Programming in .NET environment	4 th	2/2	Václavík
Java technologies	4 th	2/2	Porubän
Security in computer systems	4 th	2/2	Vokorokos
Documentation in informatics	4 th	0/3	Hauliš, Šuba, Václavík
OS Linux administration II.	4 th	0/2	Biňas
Bachelor project	5 th	0/6	Novitzká
Database Systems	5 th	2/2	Telepovská
Logical Systems	5 th	3/2	Bača
Computer Graphics	5 th	3/2	Šujanský, Sobota
Semestral Project	5 th	0/4	Novitzká
Fundamentals of Software Engineering	5 th	2/2	Havlice
Distributed programming	5 th	2/2	Paralič
Application of the network technologies	5 th	2/2	Jakab
Oracle and Database Administration I.	5 th	0/2	Telepovská
Principles of Programming Languag.	6 th	3/2	Kollár
Computer System Architectures	6 th	3/2	Vokorokos
Bachelor thesis	6 th	0/10	Kollár
Aspect-oriented Programming	6 th	2/2	Kollár, Václavík
Internet security	6 th	2/2	Vokorokos
Technologies of IS Development I.	6 th	2/2	Havlice
Oracle and Database Administration II.	6 th	0/2	Telepovská

4.2. Graduate study (Ing.)

Subject	Semester	Lectures / exercises (hours per week)	Name of Lecturer
Compilers Design	1 th	3/2	Havlice
Composition of computers	1 th	3/2	Vokorokos
Theoretical Informatics	1 th	3/2	Hudák, Tomášek
Type theory	1 th	2/2	Novitzká
Modeling and Simulation	1 th	2/2	Šujanský, Korečko
Design of digital systems	1 th	2/2	Bača
Advanced Database Technologies	1 th	2/2	Genčí
Web Technologies	1 th	2/2	Porubän
Technologies of IS Development II	1 th	0/3	Szabó
HP OpenView and HP UNIX administration I	1 th	0/2	Baláž
Modeling and Generation of Software Architectures	2 nd	2/2	Kollár
Semestral Project	2 nd	0/5	Kollár
Semantics of Programming Languages	2 nd	3/2	Novitzká
Diagnostics and Reliability	2 nd	2/2	Bača
Formal Specifications of Systems	2 nd	3/2	Hudák
Logics for informaticians	2 nd	2/2	Novitzká
Peripheral devices and connection to environment	2 nd	2/2	Vokorokos
Virtual Reality Systems	2 nd	2/2	Sobota
Technology of Software Projects-I	2 nd	2/2	Havlice
HP OpenView and HP UNIX administration II	2 nd	0/2	Baláž
Security in computer systems	3 rd	2/2	Vokorokos
Diploma project	3 rd	0/8	Kollár
Parallel Programming	3 rd	2/2	Kollár
Software Quality and Management	3 rd	2/2	Samuelis
Parallel computer systems	3 rd	3/2	Vokorokos
Designing of computer networks	3 rd	2/2	Jakab
Technology of Software Projects-II	3 rd	0/2	Havlice
Knowledge-based Systems	3 rd	3/2	Sivý
Medical informatics	3 rd	2/0	Havlice
Diploma thesis	4 th	0/8	Kollár

4.3. Undergraduate and Graduate Study for Foreign Students (In English Language)

All subjects listed in the table above are offered also in English language for foreign students.

5 RESEARCH PROJECTS

List of current research and educational projects:

- *Centre of Information and Communication Technologies for*

- Knowledge Systems**, Research and Development Operational Programme funded by the ERDF No. 26220120020, duration: 2009-2010
- **Methods for identification and analysis of security threats in computer architectures, distributed systems and dynamic networks**, Project APVV No. APVV-0073-07, duration: 2008-2010, coordinator: prof. Ing. Liberios Vokorokos, PhD.
 - **Development of videoconference archive system AVE for system EVO**, Project. APVV-0732-07, duration: 2008-2010, Partner coordinator: doc. Ing. František Jakab, PhD.
 - **Tasks Solution for Large Graphical Data Processing in the Environment of Parallel**, Distributed and Network Computer Systems, VEGA No. 1/0646/09, duration: 2009-2011, coordinator: doc. Ing. Branislav Sobota, PhD.
 - **Behavioural Categorical Models for Complex Program Systems**, VEGA No. 1/0175/08, duration: 2008-2010, coordinator: prof. RNDr. Valerie Novitzká, PhD.
 - **Knowledge-Based Software Life Cycle and Architectures**, VEGA No. 1/0350/08, duration: 2008-2010, coordinator: doc. Ing. Zdeněk Havlice, CSc.
 - **Methods of effective information transmission: Development of new generation multimedia communication services**, VEGA No. 1/0525/08, duration: 2008-2010, coordinator: doc. Ing. František Jakab, PhD.
 - **Intrusion Tolerant Security Architectures of Heterogenous Distributed and Parallel Computing Systems and Dynamic Computer Networks**, VEGA No. 1/4071/07, duration: 2007-2009, coordinator: prof. Ing. Liberios Vokorokos, PhD.
 - **Aspect-oriented Evolution of the Complex Software Systems**, VEGA No. 1/4073/07, duration: 2007-2009, coordinator: prof. Ing. Ján Kollár, CSc.
 - **Cooperation between TUKE and NTNU in the field of distributed computer network security**, Project NIL No. NIL-II-021, duration: 2009-2011, coordinator: prof. Ing. Liberios Vokorokos, PhD.
 - **Software Evolution by Language Adaptation**, APVV MVTS No. APVV SK-SI-0004-08, duration: 2009-2010, coordinator: prof. Ing. Ján Kollár, CSc.
 - **Cooperation in Design and Implementation of Language Systems**, APVV MVTS No. SK-CZ-0095-07, duration: 2008-2009, coordinator: doc. Ing. Jaroslav Porubän, PhD.
 - **Formal Specification of Programming Systems**, APVV MVTS SK-UA-0026-07, duration: 2008-2009, coordinator: prof. Ing. Hudák, DrSc.
 - **Electronic services for support of colaboration and extending bussiness activites MSP**, APVV No. VMSP-P-0055-07, duration: 2008-2009, coordinator: doc. Ing. Zdeněk Havlice, CSc.
 - **Learning simulator for information technology security specialist**, KEGA No. 3/7110/09, duration: 2009-2011, coordinator: prof. Ing. Liberios Vokorokos, PhD.
 - **Modern Technologies for Distance Learning in Computer Science Study Program**, KEGA No. 3/5244/07, duration: 2007-2009, coordinator: prof. Ing. Ján Kollár, CSc.
 - **Development of virtual and remote network of laboratories**, KEGA No. 3/7245/09, duration: 2009-2011, coordinator: doc. Ing. František Jakab, PhD.
 - **DSLAB: Innovation Laboratory of Distributed Systems**, KEGA No. 3/5166/07, duration: 2007-2009, coordinator: Ing. Martin Tomášek, PhD.

- **EDINET (E-learning in Distributed Data Network Laboratory)**, ERAZMUS No. 134608-LLP-2007-1-FI, duration: 2007-2009, coordinator: doc. Ing. František Jakab, PhD.
- **International Cooperation in Computer Science, CEEPUS No. CII-HU-0019-01-0506 (H81)**, duration: since 2005, coordinator: Ing. Ladislav Samuelis, CSc.
- **Cisco Networking Academy Program – Regional Academy at DCI FEI TU, Cisco No. 8250**, duration: since 1999, coordinator: doc. Ing. František Jakab, PhD.

6 CO-OPERATION

6.1. Co-operation in Slovakia

- Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava
- Faculty of Management Science and Informatics, University of Žilina
- Department of Informatics, Armed Forces Academy of gen. M. R. Štefánik in Liptovský Mikuláš
- Department of Informatics, University in Trenčín
- Department of Informatics, Matej Bel University in Banská Bystrica
- Institute of Computer Science, Pavol Jozef Šafárik University in Košice
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Department of Informatics, Constantine the Philosopher University, Nitra

6.1.1 Visitors to the Department

- doc. RNDr. Petr Šaloun, PhD., Ostravská univerzita v Ostravě,
- Ing. Marek Běhálek, VŠB-Technická univerzita Ostrava.
- prof. Dr. Mykola S. Nikitchenko, DrSc., National Taras Shevchenko University of Kyiv,
- prof. Dr. Dmytro Buy, DrSc., National Taras Shevchenko University of Kyiv,
- Assoc. Prof. Marjan Mernik – University of Maribor,
- Assist. Prof. Bostjan Slivnik – University of Ljubljana,
- prof. Ing. Pavol Hováth, CSc., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- prof. Ing. Ivan Hanuliak, CSc., Faculty of Control Cybernetics, University of Žilina, Slovakia
- prof. Ing. Mikuláš Alexík, CSc., Faculty of Management Science and Informatics, University of Žilina, Slovakia
- prof. Ing. Karol Matiaško, CSc., Faculty of Management Science and Informatics, University of Žilina, Slovakia
- prof. Ing. Mária Bieliková, CSc., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- prof. Ing. Milan Kolesár, CSc., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- prof. Ing. Pavol Návrat, PhD., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- prof. Ing. Milan Kolesár, CSc., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- doc. Ing. Stanislav Racek, CSc., University of West Bohemia in Pilsen,

- Czech Republic
- doc. Ing. Jaroslav Zendulka, CSc., Brno University of Technology, Czech Republic
- prof. Ing. Miroslav Liška, CSc., Military Academy of gen. M. R. Štefanik in Liptovský Mikuláš, Slovakia
- prof. Ing. Marcel Haračal, CSc., Military Academy of gen. M. R. Štefanik in Liptovský Mikuláš, Slovakia
- prof. Ing. Igor Mokriš, CSc., prof. Ing. Miroslav Liška, CSc., Military Academy of gen. M. R. Štefanik in Liptovský Mikuláš, Slovakia
- doc. RNDr. Ľubomír Dedera, PhD., Military Academy of gen. M. R. Štefanik in Liptovský Mikuláš, Slovakia
- doc. Ing. František Zbořil, CSc., Brno University of Technology, Czech Republic
- prof. RNDr. Viliam Geffert, DrSc., Pavol Jozef Šafarik University in Košice, Slovakia
- doc. RNDr. Gabriela Andrejková, CSc., Pavol Jozef Šafarik University in Košice, Slovakia
- doc. Ing. Ladislav Hluchý, CSc., Slovak Academy of Sciences, Bratislava, Slovakia
- doc. Ing. Vlastimil Jáneš, CSc., Czech Technical University in Prague, Czech Republic
- doc. Ing. Róbert Lórencz, CSc., Czech Technical University in Prague, Czech Republic
- Ing. Jarmila Škrinárová, PhD., Matej Bel University in Banská Bystrica, Slovakia
- Akademik prof. Ing. Ivan Plander, DrSc., University of Trencin, Slovakia
- doc. Ing. Jaroslav Zendulka, CSc., Brno University of Technology, Czech Republic
- Ing. Penka Martincová, PhD., Faculty of Management Science and Informatics, University of Žilina, Slovakia
- doc. Ing. Jaroslav Dočkal, CSc., University of Defence/Faculty of Military Technology, Brno, Czech Republic

6.2. International Co-operation

- University of Ostrava, Czech Republic
- VŠB – Technical University of Ostrava, Czech Republic
- University of West Bohemia in Pilsen, Czech Republic
- Czech Technical University In Prague, Czech Republic
- Brno University of Technology, Czech Republic
- Information Systems Institute, Technical University of Vienna, Austria
- Johannes Kepler University, Linz, Austria
- University of Klagenfurt, Austria
- Eötvös Loránd University, Budapest, Hungary
- Technical University of Budapest, Hungary
- University of Szeged, Hungary
- Technical University of Gdansk, Poland
- University of Oradea, Romania
- Babes-Bolyai University, Cluj-Napoca, Romania
- University of Maribor, Slovenia

- University of Kumamoto, Japan
- Fraunhofer Institute for Open Communication System (FOKUS), Berlin, Germany
- International Solomon University Kiev, Ukraine
- The National University of T. Schevchenko, Kiev, Ukraine
- Kharkov National University of Radioelectronics, Ukraine
- Uzhgorod National University, Ukraine
- ISTASE, Universite de St-Etienne, France
- Paisii Hilendarski University, Plovdiv, Bulgaria
- Politecnico di Milano Dipartimento di Electronica, Milano, Italy
- Polytechn. Eng. College, Subotica, Serbia
- University of Jyväskylä, Finland
- Jyväskylä University of Applied Sciences, School of Information Technology, Finland
- University of Minho, Portugal
- Instituto Politécnico de Bragança, Bragança, Portugal

6.2.1. Visits of Staff Members to Foreign Institutions

- Ádám, N.: AEI 2009, Genoa, Italia
- Bača, J.: National Taras Shevchenko University of Kyiv, Ukraine
- Biňas, M.: MonAMI meeting, Zaragoza, Spain,
- Biňas, M.: NetAcad conference, Brno, Czech republic
- Biňas, M.: Silesian Moodle Moot 2009, Čeladná, Czech republic
- Fecilák, P.: CATC, Bucharest, Romania
- Forgáč, M.: University of Ljubljana, Slovenia
- Forgáč, M.: University of Maribor, Slovenia
- Genči, J.: CEE symposium, Vienna, Austria
- Genči, J.: ECESIS meeting, Koblenz, Germany,
- Genči, J.: ECESIS, Lublin, Poland
- Genči, J.: TEMPUS, Yerevan, Armenian
- Giertl, J.: CEEPUS mobility, Plovdiv, Bulgaria
- Giertl, J.: Workshop NetAcad, Plzeň, Czech republic,
- Hudák, Š.: National Taras Shevchenko University of Kyiv, Ukraine
- Hudák, Š.: TEMPUS, Kyiv, Ukraine
- Hudák, Š.: VUT Brno
- Jakab, F.: AEI 2009, Genoa, Italia
- Jakab, F.: CATC, Bucharest, Romania
- Jakab, F.: EDINET meeting, University of Applied Science, Bremen, Germany
- Jakab, F.: NetAcad conference, Brno, Czech republic
- Jakab, F.: University of Ukraine, Kyiv, Ukraine
- Janitor, J.: EDINET meeting, Bern, Switzerland
- Janitor, J.: EDINET meeting, University of Applied Science, Bremen, Germany
- Kleinová, K.: NetAcad conference, Brno, Czech republic
- Kollár, J.: EMES 2009, Oradea, Romania
- Kollár, J.: IMCSIT 2009, Mragowo, Poland
- Kollár, J.: University of Ljubljana, Slovenia

- Kollár, J.: University of Maribor, Slovenia
- Michalko, M.: CATC, Bucharest, Romania
- Novák, M.: MonAmi, London, England
- Paralič, M.: SOFSEM 2009, Prague, Czech republic,
- Porubán, J.: CEEPUS, Linz, Austria
- Porubán, J.: IMCSIT 2009, Mragowo, Poland
- Porubán, J.: Microsoft center, Vienna, Austria
- Porubán, J.: University of Ljubljana, Slovenia
- Porubán, J.: University of Maribor, Slovenia
- Sabo, M.: EMES 2009, Oradea, Romania
- Samuelils, L.: CEEPUS, Budapest, Hungary
- Szabó, Cs.: Fourt International Conference on Intelligent Computing & Information Systems, Egypt, Cairo
- Šimoňák, S.: CSSim 2009 – EUROSIM, Brno, Czech republic
- Šujanský, M.: CSSS, Brno, Czech republic
- Telepovská, H.: Oracle Academy, Vienna, Austria
- Tomášek, M.: AEI 2009, Genoa, Italia
- Václavík, P.: University of Ljubljana, Slovenia
- Václavík, P.: University of Maribor, Slovenia
- Wassermann, L.: EMES 2009, Oradea, Romania

6.3. Membership in International Organizations and Societies

- Bača, J., Bandáková, J., Genči, J., Havlice, Z., Hudák, Š., Ivančík, R., Kollár, J., Korečko, Š., Krokavec, M., Novitzká, V., Porubán, J., Samuelis, L., Sobota, B., Straka, M., Šuba, S., Šujanský, M., Telepovská, H., Tóth, M., Tomášek, M., Vančík, V., Václavík, P.: Members of the CSSS - Czech and Slovak Society for Simulation
- Genči, J., Paralič, M.: Members of Association for Computing Machinery, New York, USA
- Hudák, Š.: Member of Publishing Board of Communications of The International Solomol University: Mathematical Methods in Cybernetics, Kiev, Ukraine
- Jakab, F.: Member of EMEA NetAcad team, Bedfont Lakes, Feltham, Middlesex, United Kingdom
- Novitzká, V.: Member of European Association of Programming Languages and Systems
- Novitzká, V.: Member of Common Framework Initiative, European Strategic Programme for Research in Information Technology WG 29432
- Novitzká, V.: Member of European Association of Theoretical Computer Science
- Samuelis, L.: Member of the J.von Neumann Hungarian informatics society
- Paralič, M.: Member of the Institute of Electrical and Electronics Engineers
- Samuelis, L.: Member of the EuroPACE board (virtual university, Leuven, Belgium)
- Šujanský, M.: Member of CSSIM/Scientific Association

6.4. Membership in Slovak Organizations and Societies

- Ádám, N.: A member of a Organizing Committee Chairs of The 5th Slovakian - Hungarian Joint Symposium on Applied Machine Intelligence -

SAMI'09

- Bača, J., Bandáková, J., Biňas, M., Fašianok, L., Genči, J., Giertl, J., Havlice, Z., Hudák, Š., Ivančík, R., Kollár, J., Korečko, Š., Krokavec, M., Mihályi, D., Novitzká, V., Paralič, M., Pločica, O., Porubán, J., Samuelis, L., Slodičák V., Sobota, B., Sobotová, D., Straka, M., Szabó, Cs., Šimoňák, S., Šuba, S., Šujanský, M., Telepovská, H., Tomášek, M., Tóth, M., Václavík, P., Vokorokos, L.: Members of the SSAKI - „Slovak Society for Applied Cybernetics and Informatics”
- Genči, J., Havlice, Z., Kollár, J., Novitzká, V., Samuelis, L., Sobota, B.: Members of the SIS - “Slovak Society for Computer Science”
- Genči, J.: The Second TU Košice representative in EUNIS-SK
- Havlice, Z.: Scientific board of the Faculty of Electrical Engineering and Informatics, Technical University of Košice
- Havlice, Z.: Scientific board of the Faculty of Faculty of Management Science and Informatics, Technical University of Žilina
- Havlice, Z.: Expert commission for informatization of the Faculty of Electrical Engineering and Informatics, Technical University of Košice
- Havlice, Z.: Board for development and informatization of the Technical University of Košice
- Havlice, Z.: State Examination Commission for state exams in the study field Computer Engineering and Informatics at the Faculty of Electrical Engineering and Informatics of Technical University of Košice
- Havlice, Z.: State Examination Commission for state exams in the study field Applied Informatics and Automation in Industry at the Faculty of Materials Science and Technology of Slovak University of Technology in Bratislava
- Havlice, Z.: Košice IT Valley Association, executive director
- Hudák, Š.: Member of Slovak Commission for Defense of DrSc dissertation in the scientific field Computer Engineering and Informatics
- Hudák, Š.: Member of the Common Scientific Commission for Defense of PhD dissertation in the field „Computer Tools and Systems“
- Hudák, Š.: Member of examinational board for AMBI project In Slovak Republic EXIN.SR
- Jakab, F.: Communication Technology Forum in SR (since 1997, Head of the application section, www.ctf.sk)
- Jakab, F.: Chairman of Committee for Business-Academic Cooperation, American Chamber of Commers in Bratislava
- Jakab, F.: Coordinator of the Cisco Networking Academy program for Slovakia
- Jakab F.: Member of Košice IT Valley association board
- Kollár, J.: Member of the review group of the Journal of Electrical Engineering
- Kollár, J.: Member of the review group of the Computers and Informatics journal
- Kollár, J.: Member of the program committee of the international conference ICETA – International Conference on Emerging Telecommunications Technologies and Applications, Košice, Slovak Republic
- Kollár, J.: Member of Common Scientific Commission for Defense of PhD dissertation in the field „Programm and Information System“
- Sivý, I.: Member of the examinational board for AMBI project In Slovak republic EXIN.SR

- Šujanský, M.: Member of the Board of the SSAKI - „Slovak Society for Applied Cybernetics and Informatics”
- Šujanský, M.: EUNIS – the Board of the Association for Information Technologies
- Telepovská, H.: Member of the SIUG - Slovak Informix User Group
- Vokorokos, L.: Member of the Common Scientific Commission for Defense of PhD dissertation in the field „Computer Tools and Systems“.
- Vokorokos, L.: Member of the editorial board of the scientific international journal "Transport and Logistics International Journal".
- Vokorokos, L.: Vice-chairman of the editorial board of the scientific journal - "Transactions of the Universities of Košice".
- Vokorokos, L.: Member of the editorial board of the scientific journal "Acta Avionica".
- Vokorokos, L.: Member of the Scientific board at the Technical University of Košice.
- Vokorokos, L.: Member of the Scientific board at the Faculty of Electrical Engineering and Informatics, Technical University of Košice.
- Vokorokos, L.: Member of the Common Scientific Commission for Defense of PhD dissertation in the field "Informatics".
- Vokorokos, L.: Member of the Board for development and informatization of the Technical University in Košice
- Vokorokos, L.: Member of the Expert group for informatization and development, TU-FEI, Košice

6.5. Contracts, International Scientific Projects

- Computer Networks Laboratory (CNL, www.cnl.tuke.sk)
- Cooperation with the Siemens PSE company
- Cooperation with the Sybase company
- Cooperation with the T- Systems company
- Cooperation with the Microsoft company
- Cooperation with the KOGER company
- Cooperation with the IBM company

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	168	132	11

8 OTHER ACTIVITIES

8.1. Symposia, Workshops, Conferences, Seminars

- INFORMATICS'2009 – 10th International Scientific Conference on Informatics, November 23-25, 2009, Herľany, Slovakia
- SAMI 2009 – 7th International Symposium on Applied Machine Intelligence, January 29 - 31, 2009, Herľany, Slovakia (DCI co-operation)
- ICETA 2009 – 7th International Conference on Emerging e-Learning Technologies and Applications, November 19 – 20, 2009, Stará Lesná, The High Tatras, Slovakia (DCI co-operation)

8.2. Study tours

- Peter Žársky: Eötvös Loránd University, Faculty of Informatics, Department of Programming Languages and Compilers

9 PUBLICATIONS

9.1. Books

- [1] KOLLÁR, J.: Functional programming. Košice, elfa, s.r.o, 2009, 256 pp. ISBN 978-80-8086-116-2 (in Slovak).
- [2] KOLLÁR, J.: Compilers. Košice, elfa, s.r.o. 2009, 309 pp. ISBN 978-80-8086-121-6 (in Slovak).
- [3] SOBOTA, B. - PERHÁČ, J. - STRAKA, M. - SZABÓ, C.: Tasks Solution for Large Graphical Data Processing in the Environment of Parallel, Distributed and Network Computer Systems. Košice, elfa, 2009, 178 pp. ISBN 978-80-8086-103-2 (in Slovak).

9.2. Journals

- [1] BAČA, J. - FORGÁČ, M. - JAKAB, F.: E-Learning System Syntlog. Acta Electrotechnica et Informatica, Vol. 9, No. 1, 2009, pp. 33-38, ISSN 1335-8243.
- [2] FORGÁČ, M. - KOLLÁR, J.: Adaptive Approach for Language Modification. Journal of Computer Science and Control Systems, Vol. 2, No. 1, 2009, pp. 9-12, ISSN 1844-6043.
- [3] GENČI, J.: Knowledge Assessment – Practical Example in Testing. Journal of Communication and Computer, Vol. 6, No. 8, 2009, pp. 65-69, ISSN 1548-7709.
- [4] GENČI, J.: Knowledge assessment – practical example. Sociokulturnyje problemy jazyka i komunikaciji: sbornik naučnych trudov, Vol. 5, No. 6, 2009, pp. 170-177, ISSN 1995-0500.
- [5] GUZAN, M. - SOBOTA, B.: Visualization of chaos. Journal of Electrical and Electronics Engineering, Vol. 2, No. 1, 2009, pp. 48-51, ISSN 1844-6035.
- [6] JAKUBČO, P. - ŠIMONÁK, S.: Emustudio - A Plugin Based Emulation Platform. Journal of Information, Control and Management Systems, Vol. 7, No. 1, 2009, pp. 33-45, ISSN 1336-1716.
- [7] JUHÁS, M. - JUHÁSZ, Z. - SZABÓ, C. - SAMUELIS, L.: Measuring the complexity of students' assignments. Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae: Sectio computatorica. 31, 2009, pp. 203-215.
- [8] KOLLÁR, J. - FORGÁČ, M.: Reflective Monadic Adaptation. Acta Electrotechnica et Informatica, Vol. 9, No. 3, 2009, pp. 43-47, ISSN 1335-8243.
- [9] KUNŠTÁR, J. - ADAMUŠČINOVÁ, I. - HAVLICE, Z.: The use of development models for improvement of software maintenance. Acta Universitatis Sapientiae, Informatica, Vol. 1, No. 1, 2009, pp. 45-52, ISSN 1844-6086.
- [10] KUNŠTÁR, J. - ADAMUŠČINOVÁ, I. - HAVLICE, Z.: Principles of Models Utilization in Software System Life Cycle. Acta Electrotechnica et Informatica, Vol. 9, No. 3, 2009, pp. 48-53, ISSN 1335-8243.
- [11] KUNŠTÁR, J. - HAVLICE, Z.: Knowledge Base Assisting at Identification of Secondary Changes during the Maintenance Process. Journal of Computer

- Science and Control Systems, Academy of Romanian Scientists, University of Oradea, Faculty of Electrical Engineering and Information Technology, Vol. 2, No. 1, 2009, pp. 23-26, ISSN 1884-6043.
- [12] PORUBĀN, J. - SABO, M.: Jessine: Integrating Rules in Enterprise Software Applications. Journal of Information, Control and Management Systems, Vol. 7, No. 1, 2009, pp. 81-88, ISSN 1336-1716.
- [13] SABO, M. - PORUBĀN, J.: Preserving Design Patterns using Source Code Annotations. Journal of Computer Science and Control Systems, Vol. 2, No. 1, 2009, pp. 53-56, ISSN 1844-6043.
- [14] SAMUELIS, L.: On the role of the reusability concept in automatic programming research. Acta Universitatis Sapientiae, Informatica, Vol. 1, No. 1, 2009, pp. 53-61, ISSN 1844-6086.
- [15] SLODIČĀK, V. - NOVITZKĀ, V.: Some Aspects about Coalgebras in Mathematical Theory of Programming. Journal of Computer Science and Control Systems, Vol. 2, No. 2, 2009, pp. 47-52, ISSN 1844-6043.
- [16] SOBOTA, B. - BALUN, M.: Object visualization using mixed reality technologies. AT&P journal, XVI, 11, 2009, pp. 56-62, ISSN 1336-233X (in Slovak).
- [17] SOBOTA, B. - PERHÁČ, J. - PETZ, I.: Surface modelling in 3D city information system. Journal of Computer Science and Control Systems, Vol. 2, No. 2, 2009, pp. 53-56, ISSN 1844-6043.
- [18] SOBOTA, B. - ROVNĀK, M. - SZABÓ, C.: 3D scanner data processing. Journal of Information, Control and Management Systems, Volume 7, No. 2, 2009, pp. 191-198, ISSN 1336-1716.
- [19] SOBOTA, B. - SZABÓ, C. - ŠUBA, S.: The some problems by construction of multi-screen projection system. Journal of Computer Science and Control Systems, Vol. 2, No. 1, 2009, pp. 57-60, ISSN 1844-6043.
- [20] SZABÓ, C. - SAMUELIS, L.: Observations on incrementality principle within the test preparation process. Acta Universitatis Sapientiae, Informatica, Vol. 1, No. 1, 2009, pp. 63-70, ISSN 1844-6086.
- [21] VÁCLAVÍK, P.: Application Domain Name-Based Analysis. Journal of Computer Science and Control Systems, Vol. 2, No. 2, 2009, pp. 66-69, ISSN 1844-6043.
- [22] VÝROST, M. - KOREČKO, Š. - HUDÁK, Š.: Concepts of Refinement and Simulation in BPA and B-Method. Journal of Computer Science and Control Systems, Vol. 2, No. 2, 2009, pp. 74-79, ISSN 1844-6043.
- [23] WASSERMANN, L. - KOLLĀR, J.: Metaobject Protocol as a Tool for Language Evolution. Journal of Computer Science and Control Systems, Vol. 2, No. 1, 2009, pp. 79-82, 1844-6043.
- [24] ŽĀRSKÝ, P. - LAKATOŠ, M. - HAVLICE, Z.: The Role of the Project-Knowledge in IS Development. Journal of Computer Science and Control Systems, Vol. 2, No. 2, 2009, pp. 80-83, ISSN 1884-6043.
- [25] ŽELEZNÍK, O. - HAVLICE, Z.: MDA Approach in Embedded Systems with Strict Real-Time Response and On-The-Fly Modelling Requirements. Acta Electrotechnica et Informatica, Vol. 9, No. 4, 2009, pp. 30-36, ISSN 1335-8243.

9.3. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	20	43	0

DEPARTMENT OF TECHNOLOGIES IN ELECTRONICS

<http://www.tuke.sk/fei-kte/>
Tel./Fax: +421 55 602 3195



Head of Department
prof. Ing. Alena Pietriková, PhD.
E-mail: Alena.Pietrikova@tuke.sk

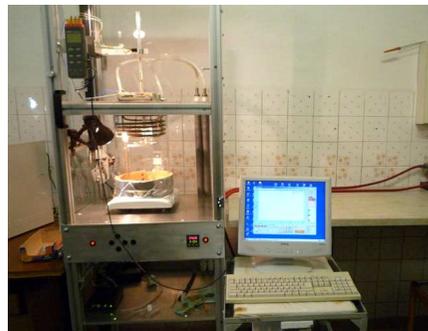
1 DEPARTMENT'S PROFILE

The Department of Technologies in Electronics (Katedra technológií v elektronike – KTE) was founded in 1991. The original name of department was Department of Hybrid Microelectronics (until 2003). The Department offers three types of full-time courses:

Bachelor's Degree course lasts in normal way 3 years and is leading to degree Bc. The graduates get more-or-less practical skills in mastering Manufacturing processes in electronics.

Master's Degree course lasts in normal way 2 years and is leading to degree Ing. The graduates get theoretical and practical skills in the area of Production Technologies in Electronics.

Doctoral Study course lasts in normal way 3 years and is leading to degree PhD. The graduates get erudition in scientific areas Electrotechnology and Materials.



The subjects in the degree courses are orientated to Technologies in Electronics with accent to thick film technology, LTCC technology, polymer technology, mounting technology in electronics and in this area to printed circuit boards and to soldering.

The basic research activities of Department are concentrated on:

- standard and polymer thick film technology,
- surface mounting technology,
- complete technology for multichip modules,
- thick-film sensors technologies.

2 STAFF

Professors:	prof. Ing. Alena Pietriková, CSc. prof. Ing. Stanislav Slosarčík, CSc. prof. Ing. Juraj Banský, CSc. Dr.h.c. prof. Ing. Miloš Somora, PhD.
Assistant Professors:	Ing. Slavomír Kardoš, PhD. Ing. Ľubomír Livovský, PhD. Ing. Juraj Ďurišin, PhD. Ing. Igor Vehec, PhD.
Research staff:	Ing. Pavol Cabúk Igor Vehec Ing. Ján Urbančík, PhD. (until 30.9.2009)
Secretary:	Eva Sepešiová
Internal Ph.D. Student:	Ing. Michal Jurčišin Ing. Michal Kravčík Ing. Juraj Ďurišin, PhD. (august 2009)
External Ph.D. Student:	Ing. Pavol Cabúk

3 LABORATORIES

- Laboratory of Thick-film Technology
- Laboratory for Assembly and Surface Mounting Technology
- Multi Chip Modules Laboratory
- Photolithographic Laboratory
- Laboratory for General Measurements

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Fundamentals of Materials Engineering	1 st	2/2	Pietriková, Banský, Kardoš, Ďurišin, Vehec
Production and Processing of Materials for Electrical Engineering	2 nd	3/2	Pietriková
Technical Documentation at Electrotechnical Production	3 rd	2/3	Livovský
Electronic Components Production	3 rd	2/2	Kardoš
Quality in Materials and Production Processes	4 th	2/2	Pietriková
Bachelor Work I.	5 th	0/3	Slosarčík
Production Equipments and Systems in Electronic	5 th	3/3	Cabúk
Bachelor work II.	6 th	0/9	Slosarčík
Technologic Practise in the Firm	6 th	0/8	Pietriková
Fundamentals of Business and Marketing	6 th	2/2	Banský
Automated Measuring Systems	6 th	3/2	Livovský
Materials for Electrical Engineering ¹			Pietriková
Production Processes in Electronics ²			Pietriková Slosarčík
CAD in Electronics ³	4 th	2/2 (part of lectures)	Livovský Galajda

¹ for Bc. study programs "Industrial Control Engineering" and "Physical Engineering of Modern Materials"

² for Bc. study programs "Applied informatics", "Automotive electronics" and "Electronics"

³ for Bc. study program "Automotive electronics" and "Electronics"

4.2. Graduate Study (Ing.)

The bilingual lectures/exercises were opened during the academic year 2006/2007.

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Production Processes in Electronics I	1 st	4/4	Pietriková
Team Project	2 nd	0/3	Pietriková
Production Processes in Electronics II	2 nd	2/4	Slosarčík
Quality and Reliability Management	2 nd	2/2	Pietriková
Project Management	2 nd	2/0	Banský
Electronics Technologies	2 nd	2/2	Slosarčík
Diploma Project	3 rd	0/4	Pietriková

Design Systems in Electronic	3 rd	3/2	Livovský
Microsystems Technology	3 rd	3/2	Somora
Structure and Properties of Sensors	3 rd	2/3	Banský
Marketing of Modern Enterprise	3 rd	2/1	Somora
Master Thesis	4 th	0/18	Pietriková
Chosen Chapters from Electronics Technologies	4 th	2/3	Pietriková
Production Processes in Electronics ¹	1 st	3/2	Slosarčík

¹ for Ing. Study program "Industrial Control Engineering"

4.3. Undergraduate and Graduate Study for Foreign Students (In English Language)

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Fundamentals of Material Engineering	1 st	2/2	Pietriková
Production Processes in Electronics	3 rd	3/2	Pietriková

5 RESEARCH PROJECTS

5.1. Research Projects

- The production of the multimedia courses for on-line and e-learning education of the university students in the area of sensor's manufacturing technologies, their properties and utilization in the biomedical engineering with an alternative for handicapped students.***
(Tvorba multimediálnych kurzov pre on-line a e-vzdelávanie vysokoškolských študentov v oblasti technológie výroby senzorov, ich vlastností a ich využitia v biomedicínskom inžinierstve s alternatívou pre študentov s postihnutím). Project KEGA 3/7117/09. Coordinator: prof. Ing. Juraj Banský, CSc. Members: majority of staff members. Short description: The aim of project is to make the generally accessible system for on-line education in the form of the e-learning by using multimedia technique. The project is divided to the partial modules of the individual topics from the area of the sensor's manufacturing technologies and their applications, CAD design systems and mounting technologies in electronic and their synergetic utilization in the biomedical engineering. Duration: 2009 – 2011.
- Progressive materials and construction solutions for technology of miniaturized systems integration*** (Progresívne materiály a konštrukčné riešenia pre technológiu 3D integrácie miniaturizovaných systémov). Project VEGA No. 1/0108/09. Coordinator: prof. Ing. Stanislav Slosarčík, CSc. Members: majority of staff members. Short description: The project is oriented to construction solutions and technological process of 3D integration of miniaturized systems. Duration: 2009 – 2011.

- ***Analysis and proposal of the complex methodology of the quality evaluation of the assembly components and systems based on lead-free solders*** (Analýza a návrh komplexnej metodiky hodnotenia kvality spojov montážnych prvkov a systémov na báze bezolovnatých spájk). Project VEGA No. 1/0298/09. Coordinator: prof. Ing. Alena Pietriková, CSc. Members: majority of staff members. Short description: The project solves several questions associated with design, development, preparation, and study of new materials, optimization of technology for new quality of interconnections in the electronics based on environmental materials. Duration: 2009 – 2012.
- ***Diagnostic and optimization of use of environmental materials for conductive joints in electronics*** (Diagnostika a optimalizácia použitia ekologických materiálov pre vodivé spájanie v elektronike) – ENVIJOINT, Project No. SK-CZ-0065-07. Coordinator: prof. Ing. Alena Pietriková, CSc. Short description: The project solves several questions associated with design, development, preparation, and study of environmental materials aimed for joint in electronics. Duration: 2008 – 2009.
- ***Advanced solder, materials for high temperature application-HISOLD***. Project COST-MP0602. Coordinator: prof. Ing. Alena Pietriková, CSc. Members: majority of staff members. Short description: The project is aimed to new materials, optimization of technology for new quality of interconnections in the electronics. Duration: 2008 – 2011.
- ***Innovation transfer and diversification of University education into the assembly Technologies in Electronics*** (Transfer inovácií a diverzifikácia vysokoškolského vzdelávania do montážnych technológií v elektronike). Project KEGA No. 1/6465/08. Coordinator: prof. Ing. Alena Pietriková, CSc. Members: majority of staff members. Short description: The project is aimed to operate the modular educational system for mounting technology as well as to producing university monograph. Duration: 2008 – 2010.

5.2. Educational Projects

- ***E-Learning Education and Continuing Training to Electronics Assembling Technology (ELECT2EAT)*** – Lifelong Learning Programme 2007-2013, LEONARDO DA VINCI Multilateral projects for transfer of innovation. Project Leonardo da Vinci LPP-LdV-TOI-2007-HU-016. Coordinator: prof. Ing. Alena Pietriková, CSc. Members: majority of staff members. Short description: Project is oriented to update, transfer, integrate and adapt innovative training content into the e-learning system, including virtual factory, meeting the identified national and regional requirements with socio-cultural and linguistic context. Duration: 2007 – 2009.
- ***Development of competences of educational staff by integrating operational exploration tasks in measures of vocational training and further education (ComEd)***. Project Leonardo da Vinci DE/08/LLP-LdV/TOI/147 174. Coordinator: prof. Ing. Alena Pietriková, CSc. Members: majority of staff members. Short description: Project is oriented to Adapting and transferring the model for integration operational exploration tasks into vocational training and further education in the context of advancement of abilities and competences of education personnel for and in SME of micro- and nanotechnologies. Duration: 2008 – 2010.

6 CO-OPERATION

6.1. Co-operation in Slovakia

The Department of Technologies in Electronics has entered into the long-term based co-operation with:

6.1.1. Industrial partners

- Molex Slovakia, a.s., Kechnec research, development, education
- SENZOR, s.r.o., Košice development
- Magneti Marelli Slovakia, s.r.o., Kechnec research, development, education
- ELCOM, s.r.o., Prešov, research, development
- PreDops, s.r.o., Prešov research, development, education
- MICRONIC s.r.o., Kysak research, development, education
- ELPRO, s.r.o., Košice development, education

6.1.2. Academic partners

All academic partners intensively co-operate on all of above fields – research, development and education, too:

- Department of Electrotechnology, FEI STU Bratislava,
- Department of Electronics and Electrotechnology, EF ŽU in Žilina,
- Slovak Academy of Science, Košice,

6.2. International Co-operation

The Department of Technologies in Electronics has entered into long-term international co-operation with:

- Zakład Układow Elektronicznych, Politechnika Rzeszow, Poland. Bilateral co-operation, Department of Electrotechnology,
- FEL ČVUT Prague, Czech Republic bilateral co-operation SK/CZ project
- HTW Dresden, Germany bilateral co-operation
- University POLITEHNICA of Bucharest (UPB), Romania - Leonardo da Vinci, COST
- Budapest University of Technology and Economics (BME), Hungary - Leonardo da Vinci, COST

6.2.1. Foreign Visitors to the Department

- dr hab. inż. Włodzimierz Kalita, Politechnika Rzeszowska, Poland 18.06. – 18.06.2009
- dr inż. Mariusz Węglarski, Politechnika Rzeszowska, Poland 21.04. – 21.04.2009,
- dr inż. Wiesław Sabat, Politechnika Rzeszowska, Poland 21.04. – 21.04.2009,
- dr inż. Mariusz Węglarski, Politechnika Rzeszowska, Poland 29.05.

- 29.05.2009,
- dr inž. Wiesław Sabat, Politechnika Rzeszowska, Poland 25.09.
– 25.09.2009,
- Ing. David Bušek, FEL ČVUT Praha, CZ, 20.11. – 30.11.2009, working deal APVV
- doc. Ing. Pavel Mach, CSc., FEL ČVUT Praha, CZ, 22.11.
– 30.11.2009, working deal APVV

6.2.2. Visits of Staff Members to Foreign Institutions

- Ďurišin, J., Germany (Hamburg) 27.01 – 29.01.2009
- Ďurišin, J., Germany (Hamburg) 01.03 – 10.04.2009
- Urbančík, J., CZ (Prague) 31.03 – 03.04.2009
- Pietriková, A., CZ (Brno) 13.05 – 17.05.2009
- Vehec, I., CZ (Brno) 13.05 – 17.05.2009
- Urbančík, J., CZ (Prague) 17.06 – 28.06.2009
- Ďurišin, J., CZ (Prague) 17.06 – 28.06.2009
- Pietriková, A., Poland (Rzeszow) 14.07 – 14.07.2009
- Banský, J., Poland (Rzeszow) 14.07 – 14.07.2009
- Ďurišin, J., CZ (Prague) 11.08 – 16.08.2009
- Pietriková, A., CZ (Prague) 11.08 – 16.08.2009
- Urbančík, J., CZ (Prague) 23.08 – 29.08.2009
- Vehec, I., CZ (Prague) 23.08 – 29.08.2009
- Kardoš, S., CZ (Temešvár) 06.09 – 10.09.2009
- Cabúk, P., CZ (Temešvár) 06.09 – 10.09.2009
- Vehec, I., CZ (Temešvár) 06.09 – 10.09.2009
- Pietriková, A., CZ (Plzeň) 09.09 – 11.09.2009
- Livovský, L., CZ (Plzeň) 09.09 – 11.09.2009
- Pietriková, A., Hungary (Gyula) 17.09 – 20.09.2009
- Ďurišin, J., Hungary (Gyula) 17.09 – 20.09.2009
- Vehec, I., Poland (Pszczyna) 21.09 – 24.09.2009
- Pietriková, A., Romania (Sibiu) 26.09 – 29.09.2009
- Ďurišin, J., Romania (Sibiu) 26.09 – 29.09.2009
- Pietriková, A., Hungary (Miskolc) 14.10 – 14.10.2009
- Slosarčík, S., Poland (Rzeszow) 05.11 – 05.11.2009
- Cabúk, P., Poland (Rzeszow) 05.11 – 07.11.2009
- Vehec, I., Poland (Rzeszow) 05.11 – 07.11.2009
- Pietriková, A., CZ (Prague) 25.11 – 29.11.2009
- Ďurišin, J., CZ (Prague) 25.11 – 29.11.2009
- Pietriková, A., CZ (Prague) 30.11 – 04.12.2009
- Ďurišin, J., CZ (Prague) 30.11 – 04.12.2009

6.3. Membership in International Organizations and Societies

- Banský, J. Member of "The International Microelectronics and Packaging Society" - U.S.A."
- Banský, J. Member of evaluation committee of Norway Financial Mechanism – EHP
- Banský, J. Member of RETRACK consortium

- Pietriková, A. Member of the International Steering Committee for International Spring Seminar on Electronics Technology – ISSE
- Pietriková, A. Member of the International Steering Committee for International Symposium for Design and Technology of Electronics Packages – ISIITME
- Pietriková, A. Member of the European Steering Committee for ESTC (Electronic system-integration Technology Conference)
- Slosarčík, S. Member of the International Steering Committee for IMAPS – Czech and Slovak
- Banský, J.: Member of "International Society for Hybrid Microelectronics - U.S.A."
- Pietriková, A.: Member of the International Steering Committee for International Spring Seminar on Electronics Technology – ISSE
- Slosarčík, S.: Member of the International Steering Committee for IMAPS – Czech and Slovak
- Pietriková, A.: Member of the European Steering Committee for ESTC (Electronic system-integration Technology Conference)
- Banský, J.: Member of evaluation committee of Norway Financial Mechanism – EHP
- Banský, J.: Member of RETRACK consortium

6.4. Membership in Slovak Organizations and Societies

- Banský, J. Professor in Chair of the Slovak Commission for Ph.D. Study in the Branch “26-35-9 Electrotechnology and Materials”, Slovak Ministry of Education
- Banský, J. Professor in Chair of the Departmental Commission for Ph.D. Study in the Branch “5-2-12 Electrotechnology and Materials” at FEI TU Košice
- Banský, J. Member of the Departmental Commission for Ph.D. Study in the Branch “5-2-12 Electrotechnology and Materials” at FEI STU Bratislava
- Banský, J.: Member of "The Convocation of Faculty of Electrical Engineering and Informatics", FEI TU Košice
- Pietriková, A. Member of Editorial Board „ACTA ELECTROTECHNICA ET INFORMATICA“
- Pietriková, A. Member of Editorial Board of Scientific Bulletin of University of Pitesti – Series: Electronics and Computer Science", (Romania)
- Pietriková, A. Member of Cultural and Educational Commission KEGA No.3
- Pietriková, A. Member of working team of the Accreditation Commission at Ministry of Education SR
- Slosarčík, S. Member of the Slovak Metrology Society
- Slosarčík, S. Registrar of the Slovak Commission for Ph.D. Study in the Branch 26 - 35 - 9 Electrotechnology and Materials

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	0	5	1

8 OTHER ACTIVITIES

9 PUBLICATIONS

9.1. Journals

- [1] PIETRIKOVÁ, A. – LIVOVSÝ, Ľ. – DURÍŠIN, J.: Sledovanie štruktúr spojov na báze zliatiny SAC. Electroscopy, ročník 2009, číslo 2_2009. ISSN 1802-4564
- [2] LIVOVSÝ, Ľ. – PIETRIKOVÁ, A.: Meranie teplotného profilu v prostredí nasýtených pár, Electroscopy, ročník 2009, číslo 2_2009. ISSN 1802-4564
- [3] SLOSARČÍK, S. – VEHEC, I. – GMITERKO, A. – CABÚK, P. – JURČIŠIN, M.: Technology and application of 3D shaped LTCC modules for pressure sensors and microsystems. In: Journal of Microelectronics and Electronic Packaging, International Microelectronics and Packaging Society, Vol.6, No. 3, 3rd Qtr 2009. IMAPS 2009. p. 158-163. ISSN 1551-4897.
- [4] CABÚK, P. – VEHEC, I. – SLOSARČÍK, S.: Measuring of pressure in intra-abdomen. In: Recent Advances in Numerical Modeling, Warsaw – Lublin 2009, Poland, Electrotechnical Institute Publishing House, IEEE 2009. p. 162-166. ISBN 978-83-922095-8-4.
- [5] KARDOŠ, S. – SOMORA, M. – SLOSARČÍK, S. – URBANČÍK, J. – VEHEC, I.: Anisotropic conductive joints utilization for joining of flexible cables at rigid substrates. In: Journal of Electrical Engineering. Vol. 60, No. 1 (2009), p. 48-52. ISSN 1335-3632.

9.2. Other publications

Publication Type	Confereces		Other
	Abroad	Home	
Number	16	4	1

DEPARTMENT OF THEORETICAL ELECTROTECHNICS AND ELECTRICAL MEASUREMENT

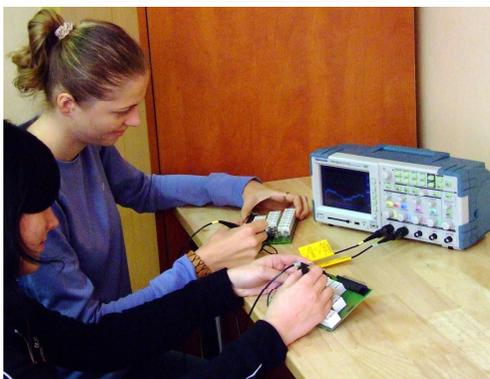
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Head of Department
Prof. Ing. Dobroslav Kováč, PhD.
E-mail : Dobroslav.Kovac@tuke.sk



1 DEPARTMENT'S PROFILE

Department of Theoretical Electrical Engineering and Electrical Measurement is a workplace, which guarantees the bachelor, master and doctoral study program Industrial Electrical Engineering. In addition to that, department's employees provide education for FEI TU students on all three-education levels. Professional field of the department is oriented on area of theoretical electrical engineering, where students learn the fundamental laws of electrical engineering and area of electrical measurement where students learn basic information and skills regarding the construction of measurement devices and measurement methods. Graduates also gain knowledge about the application of modern methods of automated and industrial measurement.



The research activity of the department is concentrated in the following areas:

- Study of the electrical, magnetic and structural properties of lanthanides and their thin films at low temperatures and in magnetic fields
- Electromagnetic field analysis of the electrotechnical products from the point of view of its electromagnetic compatibility
- Problems of risk factors of neurodegeneration: Morphological and functional study of alcohol and electromagnetic radiation effects in the rat
- Modern virtual, intelligent and automatized measuring and control systems.

2 STAFF

Professor: prof. Ing. Dobroslav Kováč, PhD.

Associate Professors: doc. Ing. Ján Dudáš, DrSc.
doc. Ing. Miroslav Mojžiš, PhD.
doc. Ing. Martin Orendáč, PhD.
doc. RNDr. Darina Špaldonová, PhD.
doc. Ing. Iveta Tomčíková, PhD.

Assistant Professors: Ing. Radoslav Bučko
Ing. Milan Guzan, PhD.
Ing. Anna Hodulíková
Ing. Ján Molnár
Ing. Tibor Vince

Technical staff: Jozef Lenart
Danuša Topolčaniová

PhD. Students: Ing. Martin Bačko
Ing. Igor Kolla
RNDr. Jozef Bagi (part-time)

3 LABORATORIES

- laboratory for industrial control systems
- two laboratories for electrical measurement
- laboratory for basics of electrical engineering
- PC laboratory
- laboratory for Internet remote measuring systems

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Fundamentals of Electrical Engineering	1 st	2/2	Orendáč, Tomčíková, Dudáš
Electrotechnics	2 nd	3/2	Dudáš, Kováč, Špaldonová, Tomčíková
Electrotechnics II	2 nd	3/3	Špaldonová
MS Office	2 nd	2/2	Guzan
Digital measurement	2 nd	2/2	Mojžiš
Electrotechnical Praktical Lessons	2 nd	0/4	Mojžiš, Hodulíková, Molnár, Orendáč, Bučko
Windows server	3 rd	2/2	Vince
Industrial Electrical Engineering I	3 rd	3/3	Kováč, Molnár
CAD systems	3 rd	2/3	Špaldonová, Tomčíková, Guzan
Informatics and Industrial Measurement	3 rd	2/2	Mojžiš

4.2. Graduate study (Ing.)

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Automated Measuring Systems	5 th	1/2	Kováč
Automation of Technological Processes 2	9 th	2/3	Kováč

4.3. Undergraduate and Graduate Study for Foreign Students (in English language)

Subject	Semester	Lectures/exercises (hours per week)	Name of Lecturer
Fundamentals of Electrical Engineering	1	1.1/1.1	Dudáš, Orendáč, Tomčíková

5 RESEARCH PROJECTS

- ***Influence of electromagnetic radiation on postnatal neurogenesis and neurodegradation.*** VEGA project No. 2/0058/08, duration: 2008-2010, co-ordinator: M. Orendáč, members: T. Vince, R. Bučko, M. Mojžiš
- ***Analysis and quantification of the project quality of building's constructions from the electromagnetic compatibility point of view and***

proposal of its improvement. VEGA project No. 1/4174/07, duration: 2007-2009, deputy co-ordinator: D. Kováč, members: J. Molnár, T. Vince, I. Tomčíková, D. Špaldonová, M. Guzan, A. Hodulíková.

- **Methodology of proposition and determination of parameters for distributed systems control of mechatronic systems in real time using Internet.** Project VEGA No. 1/0660/08, duration: 2008-2010, co-ordinator: D. Kováč, members: J. Molnár, T. Vince, I. Tomčíková, D. Špaldonová, M. Mojžiš, A. Hodulíková.
- **Virtual laboratory of telermetric systems.** Project KEGA No. 3/5227/07, duration: 2007-2009, co-ordinator: D. Kováč, members: J. Molnár, T. Vince, I. Tomčíková, D. Špaldonová, M. Guzan, A. Hodulíková.
- **E-learning and web oriented teaching technology of electrical measurement subjects for present and distant form of study.** Project KEGA No 3/6386/08, duration: 2008-2010, co-ordinator: M. Orendáč, members: D. Kováč, Molnár, T. Vince, I. Tomčíková, D. Špaldonová, M. Guzan, A. Hodulíková.
- **E-learning multimedial teaching of electromagnetic compability subject.** Project KEGA No. 3/6388/08, duration: 2008-2010, deputy co-ordinator: D. Kováč, members: M. Mojžiš, J. Molnár, T. Vince, I. Tomčíková, D. Špaldonová, A. Hodulíková.

Non-state financed research projects

- **Study of electric, magnetic and structural properties of thin films of lanthanides at low temperatures and in magnetic field.** Co-ordinator: J. Dudáš, members: M.Guzan, A. Hodulíková, From other Institutions: S.Gabáni (Slovak Academy of Sciences, Košice), V. Kavečanský (SAS, Košice), I. Gošciańska (A. Mickiewicz University, Poznań, Poland & Institute of Molecular Physics, Polish Academy of Sciences, Poznań, Poland).

6 CO-OPERATION

6.1. Co-operation in Slovakia

- Department of Experimental Physics, Šafárik University, Košice
- Faculty of Electrical Engineering and Informatics, Slovak University of Technology, Bratislava
- Institute of Electrical Engineering, Slovak Academy of Science, Bratislava
- Department of Metals, Institute of Experimental Physics, Slovak Academy of Sciences, Košice
- Department of Low Temperatures, Institute of Experimental Physics, Slovak Academy of Sciences, Košice
- Institute of Materials Research, Slovak Academy of Sciences, Košice
- Institute of Neurobiology, Slovak Academy of Sciences, Košice
- Volkswagen, Slovakia
- LVD II Slovakia - Unicorn Tornaľa
- Molex Slovakia, a.s.
- SPP, a.s.
- US Steel, Košice

6.2. International Co-operation

- Academy of Science, Czech Republic, Praha
- Czech Technical University, Praha, Czech Republic
- Institute of Molecular Physics, Polish Academy of Sciences, Poznań, Poland
- Institute of Physics, A.Mickiewicz University, Poznań, Poland
- Politechnika Czestochowska, Poland
- Stefan cel Mare University, Suceava, Romania
- University of Gliwice, Gliwice, Poland
- University of Valencia, Spain
- University, Budapest, Hungary
- University, Florencia, Italy
- University Hartz, Germany
- University, Miskolcz, Hungary
- West Bohemia University, Plzeň, Czech Republic
- Magna Steyr, Gratz, Austria

6.3. Membership in International Organizations and Societies

- D. Kováč: Member of the team of evaluators of Czech Republic Grant Agency
- D. Kováč: Member of Editorial Board of Journal "Acta Technica"

6.4. Membership in Slovak Organizations and Societies

- J. Dudáš: Member of the Slovak Vacuum Society
- J. Dudáš: Member of the Slovak Electrotechnical Society
- J. Dudáš: Member of the Slovak Physical Society
- D. Kováč: Member of the Slovak Committee for Measuring and Evaluating of Electrical Power
- D. Kováč: Member of Editorial Board of Journal "Acta Electrotechnica et Informatica"
- D. Kováč: Member of Slovak Commission for Ph.D. Study in the Branch of Electrical Measurement, Electrical Engineering and Electrotechnologies and Materials
- D. Kováč: Member of Scientific council of FEE&I TU of Košice
- D. Kováč: Member of Editorial Board of Journal „Kvalita, inovácia, prosperita“
- M. Mojžiš: Member of Technical Standardization Committee

7 THESES

Thesis type	Bachelor	Master	Doctoral
Number	0	1	0

8 OTHER ACTIVITIES

9 PUBLICATIONS

9.1. Books

- [1] KOVÁČ, D. - KOVÁČOVÁ, I. - MOLNÁR, J.: Electromagnetic compatibility -

- measurement. 1st ed. Košice: TU, 2009, 71 pages. ISBN 978-80-553-0151-8.
- [2] KOVÁČOVÁ, I. - KOVÁČ, D. - VINCE, T.: Electromagnetic compatibility. 1st ed. Košice: TU, 2009, 137 pages. ISBN 978-80-553-0150-1.
- [3] KOVÁČ, D. - KOVÁČOVÁ, I.: EMC and building engineering, 1st ed. Košice: TU, 2009, 90 pages. ISBN 978-80-553-0317-8.

9.2. Journals

- [1] DUDÁŠ, J. et al.: Influence of magnetic field on electrical resistance and magnetic ordering temperatures in holmium thin films. In: Journal of Electrical Engineering. Vol. 60, No. 4 (2009), p. 223-226. ISSN 1335-3632.
- [2] ORENDÁČOVÁ, J. et al.: Immunohistochemical study of postnatal neurogenesis after whole-body exposure to electromagnetic fields: evaluation of age - and dose-related changes in rats. In: Cellular and Molecular Neurobiology. Vol. 29, No. 6-7 (2009), p. 981-990. Internet: <<http://www.springerlink.com/content/102583/>>. ISSN 0272-4340.
- [3] KOVÁČOVÁ, I. - KOVÁČ, D.: Parasitic capacitances of power electrical systems and EMC. In: Acta Technica. Vol. 54, No. 1 (2009), p. 99-111. ISSN 0001-7043.
- [4] GUZAN, M. - SOBOTA, B.: Visualization of chaos. In: Journal of Electrical and Electronics Engineering. Vol. 2, No. 1 (2009), p. 48-51. ISSN 1844-6035.
- [5] KOVÁČ, D. - KOVÁČOVÁ, I.: Galvanic coupling - EMC of electrical systems (Part 4.). In: Journal of Electrical Engineering. Vol. 9, No. 2 (2009), p. 32-37. ISSN 1582-4594.
- [6] KOVÁČ, D. - KOVÁČOVÁ, I. - TOMČÍKOVÁ, I.: Inductive coupling of the electrical systems. In: Electrical Power Quality and Utilisation Journal. Vol. 15, No. 1 (2009), p. 79-83. ISSN 1234-6799.
- [7] KOVÁČOVÁ, I. - KOVÁČ, D.: Inductive coupling of power converters EMC. In: Acta Polytechnica Hungarica. Vol. 6, No. 2 (2009), p. 41-53. ISSN 1785-8860.
- [8] ORENDÁČOVÁ, J. et al.: Influence of short time electromagnetic radiation on postnatal neurogenesis in front brain of rat. In: Psychiatrie. Vol. 13, No. 2 (2009), p. 91-92. ISSN 1211-7579.
- [9] TOMČÍKOVÁ, I.: Verification of calculated output voltage values of elastomagnetic sensor. In: Elektrovue. No. 6 (2009), p. 6-1-6-7. ISSN 1213-1539.

9.3. Textbooks

- [1] MOJŽIŠ, M. - MOLNÁR, J.: Electrical Engineering practice: Instructions on exercises (In Slovak). 1st ed. Košice: TU FEI, 2009, 68 pages. ISBN 978-80-553-0260-7.
- [2] MOJŽIŠ, M. - MOLNÁR, J.: Electrical Engineering practice: general part (In Slovak). TU Košice, 1st ed., 2009, 47 pages. ISBN 978-80-553-0259-1.
- [3] ŠPALDONOVÁ, D. - TOMČÍKOVÁ, I.: Electrical Engineering (In Slovak). Košice: TU, FEI, 2009, 150 pages. ISBN 978-80-553-0171-6.

9.4. Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	8	3	0