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Technical University of Košice
Slovak republic
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2013

Slovensko / Slovakia

Cover Design and Editing: Ľubomír Doboš and Katarína Tomková
Contacts

Mail Address: FEI – TU Košice Letná 9 042 00 Košice Slovak Republic
Phone number: +421 55 632 2483
Fax number: +421 55 633 0115
Internet information: Faculty WEB page: http://www.fei.tuke.sk
WEB page of City of Košice: http://www.kosice.sk

Management of the Faculty

Dean:
prof. Ing. Liberios Vokorokos, PhD. - E-mail: Liberios.Vokorokos@tuke.sk

Vice-deans:
prof. Ing. Roman Cimbala, PhD. - E-mail: Roman.Cimbala@tuke.sk - responsible for development and public relations
prof. Ing. Iveta Zolotová, PhD. - E-mail: Iveta.Zolotova@tuke.sk - responsible for education in the bachelor and master study
prof. Ing. Alena Pietriková, CSc. - E-mail: Alena.Pietrikova@tuke.sk - responsible for research and doctoral study
doc. Ing. Ľubomír Doboš, CSc. - E-mail: Lubomir.Dobos@tuke.sk - responsible for foreign relations, mobility and projects co-ordinations

Departments of Faculty and their Heads

- Cybernetics and Artificial Intelligence (abbr. KKUI)
  prof. Ing. Ján Sarnovský, PhD. – E-mail: Jan.Sarnovsky@tuke.sk (until 28.2.2013)
  prof. Ing. Peter Sinčák, CSc. – E-mail: peter.Sincak@tuke.sk (since 1.3.2013)
- Computers and Informatics (abbr. KPI)
  prof. Ing. Ján Kollár, PhD. – E-mail: Jan.Kollar@tuke.sk (until 28.2.2013)
  doc. Ing. Jaroslav Porubán, PhD. – E-mail: Jaroslav.poruban@tuke.sk (since 1.3.2013)
- Electrical Engineering and Mechatronic (abbr. KEM)
  doc. Ing. Michal Girman, PhD. – Michal.Girman@tuke.sk (until 28.2.2013)
  prof. Ing. Daniela Perduková, PhD. –Daniela.perdukova@tuke.sk (since 1.3.2013)
- Mathematics and Theoretical Informatics (abbr. KMTI)
  prof. RNDr. Ján Plavka, PhD. – E-mail: Jan.Plavka@tuke.sk (until 28.2.2013)
  doc. RNDr. Marián Klešč, PhD. – E-mail: marian.klesc@tuke.sk (since 1.3.2013)
- Faculty Computer Center (abbr. PC FEI)
  prof. Ing. Liberios Vokorokos, PhD. – E-mail: Liberios.Vokorokos@tuke.sk
- Electronics and Multimedia Telecommunications (abbr. KEMT)
  prof. Ing. Dušan Levický, PhD. – E-mail: Dusan.Levicky@tuke.sk (until 28.2.2013)
  prof. Ing. Jozef Juhár, CSc. – E-mail: jozef.juhar@tuke.sk (since 1.3.2013)
- Technologies in Electronics (abbr. KTE)
  prof. Ing. Alena Pietriková, PhD. – E-mail: Alena.Pietrikova@tuke.sk
- Physics (abbr. KF)
  doc. RNDr. Dušan Olčák, PhD. – E-mail: Dusan.Olca@tuke.sk
- Electric Power Engineering (abbr. KEE)
  prof. Ing. Michal Kolcun, PhD. – E-mail: Michal.Kolcun@tuke.sk
- Theoretical Electrotechnics and Electrical Measurement (abbr. KTEEM)
  prof. Ing. Dobroslav Kováč, PhD. – E-mail: Dobroslav.Kovac@tuke.sk

Letná 9, 042 00 Košice, Slovak Republic http://www.fei.tuke.sk
**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 (TUKE). 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. The number of students currently attending nine TUKE Faculties exceeds 16,000. Approximately 13,000 of them are full-time students, out of which there are 8,500 Bachelor students, 4,000 Master students and over 500 PhD students. Almost 900 teachers work here, and the same number of research and administrative staff.

Allow me to introduce Faculty of Electrical Engineering and Informatics, Technical University in Košice in Slovakia. Faculty is a school with approx. 2322 students and 179 teachers and research associates. We have 108 PhD students in our courses. We offer more than 40 courses for faculty 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 9 educational and 5 research international projects granted by agencies from EEC countries and USA and also participates on more than 55 research projects granted by Slovak agencies. All this activity brings very interesting and highly valuable results.

There is a small community of 5 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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<td>Department of Electric Power Engineering</td>
<td>15</td>
</tr>
<tr>
<td>Department of Electronics and Multimedia Communications</td>
<td>32</td>
</tr>
<tr>
<td>Department of Electrical Engineering and Mechatronics</td>
<td>47</td>
</tr>
<tr>
<td>Department of Physics</td>
<td>63</td>
</tr>
<tr>
<td>Department of Cybernetics and Artificial Intelligence</td>
<td>73</td>
</tr>
<tr>
<td>Department of Mathematics and Theoretical Informatics</td>
<td>93</td>
</tr>
<tr>
<td>Department of Computers and Informatics</td>
<td>101</td>
</tr>
<tr>
<td>Department of Technologies in Electronics</td>
<td>118</td>
</tr>
<tr>
<td>Department of Theoretical Electrotechnics and Electrical Measurement</td>
<td>127</td>
</tr>
</tbody>
</table>
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 nine faculties. It has more than 15 000 Master’s and Bachelor’s degree students, about 1 000 PhD. students and 840 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 223 and among them 32 professors, 32 associate professors, 85 assistant professors, 9 research workers, 62 administrative staff and technicians.
- The number of BSc. students is approximately 1500, number of MSc. students is 950 and number of PhD students approximately 160, every year.

Number of the Bc. students in academic year 2013-2014

<table>
<thead>
<tr>
<th>Bc. level</th>
<th>1. year</th>
<th>2. year</th>
<th>3. year</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>550</td>
<td>328</td>
<td>415</td>
<td>1293</td>
</tr>
</tbody>
</table>
### Number of the Ing. students in academic year 2013-2014

<table>
<thead>
<tr>
<th>MSc. (Ing.) level</th>
<th>1. year</th>
<th>2. year</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>407</td>
<td>514</td>
<td>921</td>
</tr>
</tbody>
</table>

### Overall number of the students in academic year 2013-2014

<table>
<thead>
<tr>
<th>Bc. level</th>
<th>MSc. (Ing.) level</th>
<th>PhD. level</th>
<th>Total number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1293</td>
<td>921</td>
<td>108</td>
</tr>
</tbody>
</table>

### The student numbers in the academic year 2013/14 by study programs area (number of students vs. study program).

<table>
<thead>
<tr>
<th>Branch of study</th>
<th>Bc.</th>
<th>Ing.</th>
<th>PhD.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Materials and Technologies in Automotive Electronics</td>
<td>0</td>
<td>36</td>
<td>8</td>
<td>44</td>
</tr>
<tr>
<td>Electric Power Engineering</td>
<td>121</td>
<td>73</td>
<td>14</td>
<td>208</td>
</tr>
<tr>
<td>Informatics</td>
<td>573</td>
<td>288</td>
<td>27</td>
<td>888</td>
</tr>
<tr>
<td>Automotive Electronics</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Electronics</td>
<td>35</td>
<td>0</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Infoelectronics</td>
<td>0</td>
<td>30</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>73</td>
<td>0</td>
<td>11</td>
<td>84</td>
</tr>
<tr>
<td>Multimedia telecommunications</td>
<td>0</td>
<td>96</td>
<td>0</td>
<td>96</td>
</tr>
<tr>
<td>Cybernetics</td>
<td>89</td>
<td>0</td>
<td>0</td>
<td>89</td>
</tr>
<tr>
<td>Cybernetics and info control systems</td>
<td>0</td>
<td>37</td>
<td>11</td>
<td>48</td>
</tr>
<tr>
<td>Intelligent Systems</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Automation of mechatronic systems</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Industrial Control Engineering</td>
<td>43</td>
<td>17</td>
<td>3</td>
<td>63</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>0</td>
<td>64</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>Computer modeling</td>
<td>26</td>
<td>18</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>Industrial Engineering</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Applied Informatics</td>
<td>25</td>
<td>20</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Business Informatics</td>
<td>200</td>
<td>203</td>
<td>8</td>
<td>411</td>
</tr>
<tr>
<td>Physical Engineering of modern materials</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>0</td>
<td>39</td>
<td>7</td>
<td>46</td>
</tr>
<tr>
<td>Control of Electromechanical Systems</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Mechatronics systems</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electrotechnics systems</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electrical measuring systems</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Electrotechnology and materials</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1293</td>
<td>921</td>
<td>108</td>
<td>2322</td>
</tr>
</tbody>
</table>
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: prof. Ing. Roman Cimbala, PhD. responsible for development and public relations
prof. Ing. Iveta Zolotová, PhD. responsible for education in the bachelor and master study
prof. Ing. Alena Pietriková, CSc. responsible for research and doctoral study
doc. Ing. Lubomír Doboš, CSc. responsible for foreign relations, mobility and projects
Faculty Secretary: JUDr. Mária Homzová 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 form 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 and Theoretical Informatics KMTI
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 Engineering and Mechatronics KEM
Department of Electric Power Engineering KEE

CENTRES OF EXCELLENCE

The faculty has two Centres of Excellence:

1. **Center of Information and Communication Technologies for Knowledge Systems.**
   Head of the centre: prof. Ing. Dušan Kocur, PhD.
   Email: dusan.kocur@tuke.sk
   WEB: http://www.ce-ikt.fei.tuke.sk/
   The Center consists of:
   - Laboratory of Intelligent Interfaces of Communication and Information Systems
   - Laboratory of Knowledge Technologies
   - Laboratory of Progressive Communication Technologies

2. **Centre of Excellence of the Integrated Research and Exploitation of the Progressive Materials and Technologies in the Area of Automotive Electronics.**
   Head of the centre: prof. Ing. Alena Pietriková, PhD.
   Email: alena.pietrikova@tuke.sk
   WEB: http://ce3.fei.tuke.sk/
   The Center consists of:
   - Laboratory of Sensor and Communication Networks of Safe Automobile of the Future
   - Laboratory of EMC Electronic Devices and Biological Systems
   - Laboratory of Modeling and Measurement for Automotive Electronics
   - Laboratory of Automotive Electrotechnics
   - Technological Laboratory for Research of Progressive Materials for Automotive Electronics
   - Laboratory for Modification and Testing of Properties of Progressive Materials
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 13: Liberios Vokorokos, Renáta Giannusis, Peter Popovec, Eva Boszörmenyová, Marek Andričík, Ľubomír Hodulík, Tomáš Baláž, Martin Kiss, Jana Trelová, Henrieta Marchevská, Mário Harčarík, Martin Tomášek, Slavomír Šimoňák.

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 (2 years) leading to degree Ing.
- Doctoral Study courses (4 years) 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 daily form 3 years. The graduates get more- or-less practical skills in mastering
- Informatics
- Cybernetics
- Control of Electromechanical Systems
- Electric Power Engineering
- Electronics
- Industrial Electrical Engineering
- Telecommunication
- Automotive Electronics
- Applied Informatics
- Intelligent systems
- Computer modeling
- Physical Engineering of Modern Materials
- Business Informatics
Master’s Degree courses

Master’s degree course lasts in daily form 2 years. The graduates are oriented towards the selected branch of specialization:

- Applied Informatics
- Informatics
- Multimedia Telecommunication
- Electrical Engineering
- Electric Power Engineering
- Computer modeling
- Advanced Materials and Technologies in Automotive Electronics
- Industrial Control Engineering
- Artificial Intelligence
- Cybernetics and Information-Control Systems
- Infoeletronics
- Business Informatics

PhD. courses

Ph.D. course lasts in daily form 3 years:

- Electric Power Engineering
- Electrical Engineering Systems
- Electronic Measuring Systems
- Infoelectronics
- Informatics
- Business Informatics
- Cybernetics and Information-Control Systems
- Mechatronic Systems
- Telecommunications
- Artificial Intelligence
- Industrial Electrical Engineering
- Electro Technology and Materials
- Advanced Materials and Technologies in Automotive Electronics

Courses are available on full-time basis. One semester lasts 13 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 race 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**

The research at the Faculty’s departments is oriented towards the fields which are contained in both centres of excellence.

Research projects, which were co-ordinate by the Faculty staff members:

<table>
<thead>
<tr>
<th>Category of projects</th>
<th>Number of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>COST projects (international)</td>
<td>4</td>
</tr>
<tr>
<td>7th EU program</td>
<td>1</td>
</tr>
<tr>
<td>Slovak – Austrian program</td>
<td>1</td>
</tr>
<tr>
<td>Slovak – Serbian program</td>
<td>1</td>
</tr>
<tr>
<td>CEEPUS</td>
<td>2</td>
</tr>
<tr>
<td>Leonardo da Vinci</td>
<td>2</td>
</tr>
<tr>
<td>Erasmus program</td>
<td>3</td>
</tr>
<tr>
<td>Erasmus MUNDUS</td>
<td>1</td>
</tr>
<tr>
<td>TEMPUS program</td>
<td>1</td>
</tr>
<tr>
<td>Subtotal</td>
<td>16</td>
</tr>
<tr>
<td>National projects supported by VEGA</td>
<td>18</td>
</tr>
<tr>
<td>National projects supported by KEGA</td>
<td>21</td>
</tr>
<tr>
<td>National projects supported by APVV</td>
<td>6+6</td>
</tr>
<tr>
<td>National projects supported by Agency</td>
<td>10+4</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
</tr>
</tbody>
</table>

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)
- The Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU (Agency)

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 2013 there were accomplished 11 projects of such category at the Faculty.

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

**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 Częstochowska (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:

**7th EU Framework**

**CEPTUS 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**
- Innovation Transfer Network (abbr. IN.TRA.NET, co-ordinator: Ján Šaliga, department: KEMT)
- Virtual and Practical Applications to Electronic assembling Technology (co-ordinator: Alena Pietriková, department: KTE)

**COST projects**
- Truthworthy Manufacturing and Utilization of Secure Device COST IC1204 (co-ordinator: Miloš Drutarovský, department: KEMT)
- Cooperative Radio Communication for Green Smart Environments – COST IC1004 (co-ordinator: Lubomír Doboš, department: KEMT)
- Integrating Biometrics and Forensics for the Digital age COST IC1106 (co-ordinator: Matúš Pleva, department: KEMT)
- Wireless Power Transmission for Sustainable Electronics (WiPE) COST IC1301 (co-ordinator: Dušan Kocur, department: KEMT)
**Slovak – Austrian program**

- Pokročilá výučba softvérového inžinierstva - metódy a nástroje (co-ordinator: Csaba Szabó, department: KPI)

**Slovak – Serbian program**

- Adaptívne personalizované výučbové prostredia (co-ordinator: Jaroslav Porubán, department: KPI)

**Erasmus projects**

- Strategic Alignment of Electrical and Information Engineering in European Higher Education Institutions (contact: Ján Liguš, department: KKUI)
- Developing Open Source Systems Expertise in Europe (contact: Marek Paralič, department: KPI)
- SUSCOMTEC – IP Intercultural Knowledge Transfer in Engineering for a Sustainable Global ICT Community (contact: Lubomír Doboš, department: KEMT)

**Erasmus MUNDUS**

- THELXINOE: Erasmus Euro-Oceanian Smart City Network (contact: Lubomír Doboš, department: KEMT)

**TEMPUS program**

- Towards trust in quality assurance systems (co-ordinator: František Jakab, department: KPI)
- Technological Transfer Network (abbr.: TecTNet, co-ordinator: Ján Šaliga, department: KEMT)
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 independent science and research unit of the faculty. The most important structural changes of the department were:

- integration of the original department with the Department of Electrical Heating and Electrochemistry on the 1st September 1981,

These structural changes influenced the department activities and staff changes. The Department of Electric Power Engineering currently has 3 professors, 1 guest professor, 2 associate professors, 10 assistant professors, 1 scientific worker and 14 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 provides 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 enhances and improves educational process also in cooperation with foreign universities through 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 ensured by the extensive cooperation with the electric power companies (SEPS, VSE, VSD, Siemens, ABB, ZSE, SSE, Landis+Gyr, Schneider Electric and many others).

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. Roman Cimbala, Ph.D.
prof. Ing. Michal Kolcun, Ph.D.
prof. Ing. Iraida Kolcunová, Ph.D.
Dr. Ing. Peter Birkner (guest professor)

Associate Professors: doc. Ing. Študent Beňa, Ph.D.
doc. Ing. Alexander Mészáros, Ph.D.
doc. Ing. Juraj Kurimský, Ph.D. (since 01.11.2013)

Assistant Professors: Ing. Jozef Balogh, Ph.D.
Dr. Ing. Bystrík Dolník
Ing. Jaroslav Džmura, Ph.D.
Ing. Marek Hvízdoš, Ph.D.
Ing. Stanislav Ilenin, Ph.D.
Ing. Martin Kanálik, Ph.D. (since 01.01.2013)
Ing. Juraj Kurímský, Ph.D. (until 31.10.2013)
Ing. Dušan Medveď, Ph.D.
Ing. Jaroslav Petráš, Ph.D.
Ing. Ján Tkáč, CSc.

Senior Scientists: prof. Ing. Karol Marton, DrSc. (part time)

Dagmar Kramolišová
doc. Ing. Ladislav Varga, Ph.D.
ing. Jana Varnavčinová

Ph.D. Students: Ing. Vieroslava Sklenárová
Ing. Pavol Hocko
Ing. Marián Hrinko
Ing. Martin German-Sobek
Ing. Roman Jakubčák
Ing. Jozef Király
Ing. Matúš Novák
Ing. Marek Pavlík
Ing. Ján Zbojovský
Ing. Zsolt Čonka
Ing. Miroslav Kmec
Ing. Lukáš Lisoň
Ing. Miroslav Mikita (since 01.09.2013)
ing. Samuel Bucko (since 01.09.2013)

3 LABORATORIES
• Three PC Laboratories
• Laboratory of Electrical Relays
• Laboratory of Electro-thermal Technologies
• Laboratory of Environmental Protection
• Laboratory of Electrical Power Network
• 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 Overvoltage Protection
• Laboratory of Intelligent Systems
• Electric Power Systems Control Laboratory, Joint Laboratory of Department of Electric Power Engineering TU FEI Košice and ABB ELEKTRO, Ltd., Bratislava
• Laboratory of Electro-magnetic Compatibility
• Laboratory of Photovoltaics
### 4.1 Undergraduate Study (Bc.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (Hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Electrical Engineering</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/2</td>
<td>Balogh</td>
</tr>
<tr>
<td>Introduction to programming and networks</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>0/2</td>
<td>Petráš</td>
</tr>
<tr>
<td>Fundamentals of environmental engineering</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Mészáros</td>
</tr>
<tr>
<td>Programming</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0/2</td>
<td>Petráš</td>
</tr>
<tr>
<td>Computers in Electric Power Engineering</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>1/2</td>
<td>Cimbala</td>
</tr>
<tr>
<td>Power transmission</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Varga</td>
</tr>
<tr>
<td>Light - technology</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Beňa</td>
</tr>
<tr>
<td>Designing in electric power engineering</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Ilenin</td>
</tr>
<tr>
<td>Generation and transmission of electrical energy</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Kolcun Kanálík</td>
</tr>
<tr>
<td>Electric Power Plants</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Kolcun</td>
</tr>
<tr>
<td>Operating systems - Linux I</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Kurimský</td>
</tr>
<tr>
<td>Faults in Electric Power System</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Beňa</td>
</tr>
<tr>
<td>Computers in Electric Power Engineering</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1/2</td>
<td>Cimbala</td>
</tr>
<tr>
<td>Overvoltage protection of computer networks</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/1</td>
<td>Dolník</td>
</tr>
<tr>
<td>Bachelor Thesis I</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0/5</td>
<td>(Supervisors)</td>
</tr>
<tr>
<td>Electrical installation and substation</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Varga</td>
</tr>
<tr>
<td>Software engineering environment</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Cimbala</td>
</tr>
<tr>
<td>High Voltage Engineering</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Kolcunová</td>
</tr>
<tr>
<td>Economy in the electric power engineering</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Mészáros</td>
</tr>
<tr>
<td>Operation of electric power plants</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Džmura</td>
</tr>
<tr>
<td>Bachelor Thesis II</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0/9</td>
<td>(Supervisors)</td>
</tr>
<tr>
<td>Electrical relaying in electric power system</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Hvizdoš</td>
</tr>
<tr>
<td>Electric Power System Operation</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Kolcun</td>
</tr>
<tr>
<td>Unconventional energy sources</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Tkáč</td>
</tr>
<tr>
<td>Safety at work on electric devices</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Balogh</td>
</tr>
<tr>
<td>Overvoltage protection of computer networks</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/1</td>
<td>Dolník</td>
</tr>
</tbody>
</table>

### 4.2 Graduate Study (Ing.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (Hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatization of Electric Power Plant Service</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Cimbala</td>
</tr>
<tr>
<td>Quality and reliability of electric power delivery</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Beňa Kanálík</td>
</tr>
<tr>
<td>Simulation in Electric Power System</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Medvedź</td>
</tr>
<tr>
<td>Optimisation of Electric Power System Operation</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Kolcun</td>
</tr>
</tbody>
</table>
### 4.3 Postgraduate Study (PhD.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (Hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretic electric power engineering (4)</td>
<td>1\textsuperscript{st}</td>
<td>0/2</td>
<td>Cimbala, Kolcunová, Novák, Varga, Birkner, Mészáros, Beňa</td>
</tr>
<tr>
<td>Scientific Activity 1 (4)</td>
<td>1\textsuperscript{st}</td>
<td>0/8</td>
<td>(Supervisors)</td>
</tr>
</tbody>
</table>
### Subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (Hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity supply system analysis</td>
<td>2nd</td>
<td>0/2</td>
<td>Cimbala, Kolcun, Kolcunová, Novák, Varga, Birkner, Mészáros, Beňa</td>
</tr>
<tr>
<td>Scientific Activity 1</td>
<td>2nd</td>
<td>0/2</td>
<td>(Supervisors)</td>
</tr>
<tr>
<td>Subject of specialised area (4)</td>
<td>3rd</td>
<td>0/2</td>
<td>Cimbala, Kolcun, Kolcunová, Novák, Varga, Mészáros, Beňa</td>
</tr>
<tr>
<td>Scientific Activity 2 (4)</td>
<td>3rd</td>
<td>0/16</td>
<td>(Supervisors)</td>
</tr>
<tr>
<td>Scientific Activity 2</td>
<td>4th</td>
<td>0/2</td>
<td>(Supervisors)</td>
</tr>
<tr>
<td>Scientific Activity 3 (4)</td>
<td>5th</td>
<td>0/16</td>
<td>(Supervisors)</td>
</tr>
<tr>
<td>Dissertation thesis</td>
<td>6th</td>
<td>0/9</td>
<td>(Supervisors)</td>
</tr>
</tbody>
</table>

### 5 RESEARCH PROJECTS

- **Research of dynamic processes in the electric power system of the Slovak Republic.** Scientific grant agency project (S.G.A.) No. 1/0388/13, duration: 2013-2015, co-ordinator: Kolcun, M.
- **Photovoltaic component parameters research for effective design of solar systems (Výskum charakterísk fotovoltaických komponentov pre efektívne projektovanie solárnych systémov),** Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU, No. 26220220080, duration: 2010 – 2013
- **Centre of excellence for integrated research and exploitation of progressive materials and technologies in automobile electronics (Centrum excelentnosti integrovaného výskumu a využitia progresivných materiálov a technológií v oblasti automobilovej elektroniky),** Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU, No. 26220120055, duration: 2010 – 2013
- **Protection of population in Slovak republic against electromagnetic field influences (Ochrana obyvateľstva SR pred účinkami elektromagnetických polí),** Agency of the Ministry of Education, Science,
Research and Sport of the Slovak Republic for the Structural Funds of EU, No. 26220220145, duration: 2011 – 2014
- **University Science Park Technicom for innovative applications with support of knowledge technologies (Univerzitný vedecký park TECHNICOM pre inovačné aplikácie s podporou znalostných technológií),** Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU, No. 26220220182, duration: 2013 – 2015

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, Jaslovske Bohunice
- Nuclear Power Plant EMO, Mochovce
- Heat and Power Plant TEKO, Košice
- Slovak Electric Transmission System, Inc. (SEPS, a.s.), Bratislava
- VSE – Eastern Slovakia Power Engineering, Inc., Košice
- SSE - Central Slovakia Power Engineering, Inc., Žilina
- ABB Ltd., Bratislava
- Research Institute of Nuclear Power Plants, Inc. (VUJE, a.s.), Trnava
- Slovak Gas Industry, Division Slovtransgaz, Nitra
- U.S. Steel, Košice
- Siemens Ltd., Bratislava
- Hasma, Ltd.,
- Schneider Electric Slovakia, Ltd.,
- ZSE - Western Slovakia Power Engineering, Inc.,
- SAG ELV Slovensko, Inc.,
- Landis +Gyr, Ltd.,

6.1.1. **Visitors to the Department**
- Assoc. prof. Ph.D. Hristo Krachunov – Technical University of Varna, Bulgaria
- prof. Ing. Stanislav Rusek, CSc. – VŠB Technical University of Ostrava, Czech Republic
- doc. Ing. Radomír Goňo, PhD. – VŠB Technical University of Ostrava, Czech Republic
- Prof. Dr hab.inz. Waldemar Minkina – Czestochowa University of Technology, Poland
- Dr. inz. Slawomir Grays – Czestochowa University of Technology, Poland
6.2 International Co-operation

- Moscow Power Engineering Institute, Russia
- Sankt - Petersburg Power Education Institute of Power Engineering, State Department of Russian Federation, Russia
- Graz University of Technology, Austria
- Czestochowa University of Technology, Poland
- Polytechnika Częstochowska, Poland
- Akademia Górniczo - Hutnicza, Krakow, Poland
- Technical University of Riga, Latvia
- Technical University of Tallinn, Estonia
- COMTEST Ltd. Netherlands
- 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
- ÓBUDA University, Budapest, Hungary
- Technical University of Varna, Bulgaria
- ABB Switzerland Ltd, Switzerland

6.2.1. Visits of Staff Members to Foreign Institutions

- Beňa, L.: Czech Technical University in Prague, Czech Republic, 29.1.-1.2.2013
- Džmura, J.: Czech Technical University in Prague, Czech Republic, 29.1.-1.2.2013
- Novák, M.: Technical University of Riga, Latvia, 27.2. – 31.5.2013
- Király, J.: WBU, Pilsen, Czech Republic, 3.2 – 3.5.2013
- German-Sobek, M.: WBU, Pilsen, Czech Republic, 3.2 – 3.5.2013
- Jakubčák, R.: Czech Technical University in Prague, Czech Republic, 3.2 – 3.5.2013
- Cimbala, R.: Budapest University of Technology and Economics, Hungary, 16.-17.4.2013
- Dolník, B.: Budapest University of Technology and Economics, Hungary, 17.-18.4.2013
- Petráš, J.: Budapest University of Technology and Economics, Hungary, 17.-18.4.2013
- Cimbala, R.: Technical University of Liberec, Czech Republic, 21.-23.5.2013
- Hvizdoš, M.: Czech Technical University in Prague, Czech Republic, 26.5.-1.6.2013
- Ilénin, S.: Czech Technical University in Prague, Czech Republic, 26.5.-1.6.2013
- Medved, D.: Czech Technical University in Prague, Czech Republic, 26.5.-1.6.2013
- Kolcunová, I.: VŠB-Technical University of Ostrava, Czech Republic, 28.-30.5.2013
• Balogh, J.: VŠB-Technical University of Ostrava, Czech Republic, 28.-30.5.2013
• Kolcunová, I.: Universita Degli Study di Genova, Italy, 31.8.-11.9.2013
• Tkáč, J.: Czech Technical University in Prague, Czech Republic, 1.-7.9.2013
• Kolcun, M.: World Energy Council, Daegu, South Korea, 8.10.-20.10.2013
• Kolcunová, I.: World Energy Council, Daegu, South Korea, 8.10.-20.10.2013

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 CIRED
• 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.: Member of Editorial Board Journal Rynek Energii, Lublin, Poland
• Kolcun, M.: Honorary Professor of Óbuda University, Hungary
• Kolcun, M.: nomination of Dr.h.c. Czestochowa University of Technology, Poland
• 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
• 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 IEEE
• 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
• Kurímský, J.: Member of WG for Electrical Machine Diagnostics, US Steel Košice
• Kurímský, 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.: Member of Technical Standardization Commission of Slovak Republic – Electrical Power Engineering, TK No.43
• Balogh, J.: Member of Technical Standardization Commission of Slovak Republic – Electrical Installations and Protection against Electric Shock, TK No.84
• 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
• Hvizdovš, 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
• Medveň, 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

6.5 Contracts, International Scientific Projects
• Erasmus Intensive Programme “Renewable Energy Sources” 2012
  (Coordinator: prof. Ing. Jan Mühlbacher, CSc. Technical University, ZCU Pilsen, guarantee for department: Dr.h.c. prof. Ing. Michal Kolcun, Ph.D.)

7 THESES

<table>
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<tr>
<th>Thesis type</th>
<th>Bachelor</th>
<th>Master</th>
<th>Doctoral</th>
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8 OTHER ACTIVITIES

8.1 Conferences, Seminars
• Symposium: Elektroenergetika 2013, 18.-20.9.2013, Stará Lesná - High Tatras, Slovak Republic
• Specialized Seminar: 40 years of cooperation between Department of Electric Power Engineering FEI TUKE with electric power industry, 7.-8.11.2013, Poráč, Slovak Republic.

8.2 Expert References

8.3 Projects for Industry Companies
• Cimbala, R.: Processing and Evaluation of HF signal in earthing system KS 03 Veľké Zlieve, PSM, s.r.o. Košice, 2013, Slovak Republic
• Kolcun, M.: Design of fuse protection and maximal load of cables in the middle of TS protected pole, VSE,a.s., 2013, Slovak Republic
• Cimbala, R.: Calibration, U.S.Steel Košice, 2013, Slovak Republic
• Kolcun, M.: Contract for providing service on EE 2013 Symposium, VSE,a.s., 2013, Slovak Republic
8.4 Compositions for Dissertation Examinations

- Košický, T.: Usage of FACTS devices with possibility of energy accumulation in electric power network (Beňa, L.)
- Rusek, B.A.: Use of selected forecasting methods for the planning of prices for biomass applicable to renewable energy sources (Kolcun, M.)
- Király, J.: Thermal degradation of insulating systems, (Cimbala, R.)
- German-Sobek, M.: Dielectric spectroscopy of insulation materials, (Cimbala, R.)
- Pavlík, M.: Research of electromagnetic waves transfer, reflection and absorption in laminated materials, (Kolcunová, I.)
- Zbojovský, J.: Electromagnetic Field Modelling in Inhomogeneous Material Environments, (Mészáros, A.)
- Jakubčák, R.: Possibilities of using FACTS devices to decrease active power losses, (Beňa, L.)
- Čonka, Z.: Research of devices designed to improve the transient stability of the power system, (Kolcun, M.)

9 PUBLICATIONS

9.1 Journals


9.2 Textbooks


9.3 Other publications

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<thead>
<tr>
<th>Publication Type</th>
<th>Conferences</th>
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<td>Number</td>
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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.
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
- 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,
- Electronics measurement systems.

Teaching and research activities of the department are focused on advanced technologies of electronics, telecommunications and smart measuring systems. In addition to the theoretical and practical basics, the teaching is more concentrated on mobile and satellite technologies and services, automotive electronics, digital processing and transmission of multimedia signals (image, video, speech), cryptography and security in telecommunication networks, optoelectronics and optical communication, sensor systems, interactive telecommunications systems and services.

2 STAFF

Professors: Dr.h.c. prof. Ing. Anton Čižmár, CSc.
prof. Ing. Jozef Juhár, 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.
prof. Ing. Ján Šaliga, CSc.
Dr.h.c. prof. RNDr. Ing. Ján Turán, DrSc.

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

Associate Professors: doc. Ing. Lubomír Doboš, CSc.
doc. Ing. Miloš Drutarovský, CSc.
doc. Ing. Pavol Galajda, CSc.
doc. Ing. Ján Gamec, CSc.
doc. Ing. Luboš Ovseník, PhD.

Assistant Professors: Ing. Gabriel Bugár, PhD.
Ing. Mária Gamcová, PhD.
Ing. Juraj Gazda, PhD.
Ing. Iveta Gladišová, CSc.
Ing. Ladislav Maceková, PhD.
Ing. Stanislav Ondás, PhD.
Ing. Ján Papaj, PhD.
Ing. Jozef Zavacký, CSc.

Research Assistant: Ing. Vladimír Bánoci, PhD.
Mgr. Jana Fortes, PhD.
Ing. Daniel Hládek, PhD.
Ing. Zita Klenovičová, CSc.
Ing. Martin Lojka, PhD.
Ing. Eva Kiktová, PhD.
Ing. Matúš Pleva, PhD.
Ing. Ján Staš, PhD.
Ing. Michal Varchola, PhD.
Ing. Peter Viszlay PhD.
Ing. Matej Žiga

Support staff: Ing. Zuzana Ciulisová
Božena Marchevská
Viera Šumáková
Ph.D. students:

**Internal form:**
- Ing. Martin Broda
- Ing. Denis Dupák
- Ing. Patrik Gallo
- Ing. Marek Godla
- Ing. Tomáš Harasthy
- Ing. Peter Kažimír
- Ing. Ondrej Kováč
- Ing. Patrik Gallo
- Ing. Martin Sulír
- Ing. Ján Schneider
- Ing. Martin Sulír
- Ing. Ján Tóth
- Ing. Ján Valiska
- Ing. Jozef Vavrek
- Ing. Daniel Zlacký
- Ing. Jozef Lipták
- Ing. Lenka Macková
- Ing. Daniel Novák
- Ing. Ján Pastirčák
- Ing. Martin Petrvalský
- Ing. Ján Ružbarský
- Ing. Peter Kažimír
- Ing. Ján Krekáň
- Ing. Daniel Zlacký
- Ing. Ondrej Kováč
- Ing. Jozef Vavrek
- Ing. Daniel Zlacký
- Ing. Ján Krekáň
- Ing. Jozef Lipták
- Ing. Lenka Macková

**External form:**
- Ing. Martin Kmec
- Ing. Matúš Kozák
- Ing. František Rakoci
- Ing. Martin Kmec
- Ing. Matúš Kozák
- Ing. František Rakoci
- Ing. Martin Kmec
- Ing. Matúš Kozák
- Ing. František Rakoci
- Ing. Martin Kmec
- Ing. Matúš Kozák
- Ing. František Rakoci
- Ing. Martin Kmec
- Ing. Matúš Kozák
- Ing. František Rakoci

3 **EQUIPMENT**

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 and Equipments**
- 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**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
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<td>Basics of electronics</td>
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<td>Signals and systems</td>
<td>3rd</td>
<td>3/2</td>
<td>Mihalík</td>
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<tr>
<td>Microelectronic circuits</td>
<td>4th</td>
<td>3/2</td>
<td>Michaeli</td>
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<td>Electronic measurement systems</td>
<td>4th</td>
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<td>Saliga</td>
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<td>Galajda</td>
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<td>CAD in electronics</td>
<td>5th</td>
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<td>Automotive electronics</td>
<td>5th</td>
<td>2/2</td>
<td>Gamec</td>
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<tr>
<td>Automotive embedded systems</td>
<td>6th</td>
<td>3/2</td>
<td>Drutarovský</td>
</tr>
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<td>Active and passive safety systems</td>
<td>6th</td>
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<td>Gamec</td>
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<td>Networks technology</td>
<td>6th</td>
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<td>Cižmár</td>
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### 4.2 Undergraduate Study (Bc.) – Electronics

<table>
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<td>Basics of electronics</td>
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<td>Circuit theory</td>
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<td>3/2</td>
<td>Kocur</td>
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<td>Mihaník, Gladišová</td>
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<td>2/2</td>
<td>Gamec</td>
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<td>Electronic measurement systems</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Šaliga</td>
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<td>Digital electronic systems</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Galajda</td>
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<tr>
<td>Networks technology</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Čižmár</td>
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<td>Microelectronic circuits</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/2</td>
<td>Michaeli</td>
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<td>Electroacoustics</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Juhár</td>
</tr>
<tr>
<td>Electromagnetic waves and antennas</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Ovseník</td>
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<tr>
<td>Programming environments for electronics and communications</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1/2</td>
<td>Varchola, Šaliga</td>
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<tr>
<td>Video communications</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Mihaník</td>
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<tr>
<td>Networks architecture</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/2</td>
<td>Čižmár</td>
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<td>Bachelor thesis I.</td>
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<td>2/2</td>
<td>Gamec</td>
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<td>Microprocessor technology</td>
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<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
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<tr>
<td>Smart measurement systems</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Šaliga</td>
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<tr>
<td>Satellite technology and services</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/2</td>
<td>Marchevský</td>
</tr>
<tr>
<td>Active and passive safety systems</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/2</td>
<td>Gamec</td>
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### 4.3 Undergraduate Study (Bc.) – Telecommunications

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<th>Name of Lecturer</th>
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<tr>
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<td>Digital electronics</td>
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<td>Circuit theory</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Kocur</td>
</tr>
<tr>
<td>Signals and systems</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Mihaník, Gladišová</td>
</tr>
<tr>
<td>High frequency and microwave technology</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Gamec</td>
</tr>
<tr>
<td>Electronic measurement systems</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Šaliga</td>
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<td>Introduction to telecommunication</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
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<td>Networks technology</td>
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<td>2/2</td>
<td>Čižmár</td>
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<td>Electromagnetic waves and antennas</td>
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<td>Ovseník</td>
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<td>Electroacoustics</td>
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### 4.4 Graduate Study (Ing.) – Infoelectronics

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<td>Digital signal processing</td>
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<td>Mihalík, Zavacký</td>
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<tr>
<td>Optoelectronics</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/2</td>
<td>Turán</td>
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<td>Programmable logic devices</td>
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<td>Signal processors</td>
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<td>Electronic measurement</td>
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<td>3/2</td>
<td>Šaliga</td>
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<tr>
<td>Digital image processing and coding</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Mihalík</td>
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<td>Semestral projects</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
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<td>Processing and transmission of speech and audio</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Juhár</td>
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<td>Applied cryptography</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Levický</td>
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<tr>
<td>Digital filters</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Kocur</td>
</tr>
<tr>
<td>Microwave circuits and systems</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Gamec</td>
</tr>
<tr>
<td>Optical communication systems</td>
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<td>3/2</td>
<td>Turán</td>
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<td>0/6</td>
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<td>Database systems – SQL Oracle</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
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<td>Juhár</td>
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<td>Digital television</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Marchevský</td>
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<td>Photonics</td>
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<td>3/2</td>
<td>Michaeli</td>
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<tr>
<td>Multimedia technologies</td>
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<td>3/2</td>
<td>Levický</td>
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<tr>
<td>Mobile communications</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
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<td>UWB sensor networks</td>
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<td>2/2</td>
<td>Kocur, Rovňáková</td>
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<tr>
<td>Interactive telecommunications systems and services</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Juhár</td>
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<td>Master thesis II.</td>
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<td>0/18</td>
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<td>Project management</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
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4.5 Graduate Study (Ing.) – Multimedia Telecommunications

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<td>2/2</td>
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<td>Spread-spectrum communication systems</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
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<td>Kocur</td>
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<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/2</td>
<td>Kocur</td>
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<td>Signal processors</td>
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<td>3/2</td>
<td>Drutarovský</td>
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<td>Processing and transmission of</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Juhár</td>
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<tr>
<td>Telecommunications systems theory</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Čižmár</td>
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<tr>
<td>Optical communication systems</td>
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<td>Čižmár</td>
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<td>Mihalík</td>
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<td>Digital filters</td>
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<td>Kocur</td>
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<td>Levický</td>
</tr>
<tr>
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<td>0/6</td>
<td>Čižmár</td>
</tr>
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<td>Database systems – SQL Oracle</td>
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<td>2/2</td>
<td>Juhár</td>
</tr>
<tr>
<td>Mobile communications</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
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<td>Doboš</td>
</tr>
<tr>
<td>UWB sensor networks</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
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<td>Kocur, Rovňáková</td>
</tr>
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<td>Photonics</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Turán</td>
</tr>
<tr>
<td>Digital television</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Marchevský</td>
</tr>
<tr>
<td>Multimedia technologies</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Levický</td>
</tr>
<tr>
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4.6 Postgraduate Study (PhD.) – Infoelectronics

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
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<tr>
<td>Foreign language</td>
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<td>Specialization subject</td>
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<td>0/2</td>
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<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
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<td>Research project III.</td>
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<tr>
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<td>0/8</td>
<td></td>
</tr>
<tr>
<td>Research project IV.</td>
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<td>Research project V.</td>
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<tr>
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### 4.7 Postgraduate Study (PhD.) – Electronics Measurement Systems

<table>
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<tr>
<th>Subject</th>
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<th>Lectures/exercises (hours per week)</th>
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<tr>
<td>Foreign language</td>
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<tr>
<td>Measure theory</td>
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<td>Research project II.</td>
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<tr>
<td>Specialization subject</td>
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<td>0/2</td>
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</tr>
<tr>
<td>Research work</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>0/8</td>
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</tr>
<tr>
<td>Research project III.</td>
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<tr>
<td>Research work</td>
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<td>Thesis - Research work</td>
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### 4.8 Graduate Study (PhD.) – Telecommunications

<table>
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<tr>
<th>Subject</th>
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<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
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<td>Advanced communication technology</td>
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<tr>
<td>Specialization subject</td>
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<td>0/2</td>
<td></td>
</tr>
<tr>
<td>Research work</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>0/8</td>
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<tr>
<td>Research project III.</td>
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<td>Thesis - Research work</td>
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</tr>
</tbody>
</table>

### 5 RESEARCH PROJECTS

- Propagation Tools and Data for Integrated Telecommunication, Navigation and Earth Observation Systems (COST Action IC0802)
- Integrating Biometrics and Forensics for the Digital Age (COST Action IC1106)
- Trustworthy Manufacturing and Utilization of Secure Devices (COST Action IC1204)
- Wireless Power Transmission for Sustainable Electronics (COST Action IC1301)
No 218086)  
- European Digital Virtual Design Lab (518565-LLP-1-2011-1-BE-ERASMUS-ESMO)  
- Technological Transfer Network (544197-TEMPUS-1-2013-1-IT-TEMPUS-JPHES)  
- Wireless Sensor Network for Water Quality Monitoring (Hungary-Slovakia Cross-border Co-operation HUSK/1101/1.2.1/0091)  
- Complex Modular Robotic System of Middle Category with Increased Intelligence (Ministry of Education of Slovak Republic Project, No. Req-00169-0001)  
- Development of Experimental Measurement Apparatuses and Multimedial e-Learning Textbook for the Purpose of the Education Process Support in the Field of UWB Radar System (Project supported by the Slovak Cultural and Educational Grant Agency under contract, KEGA Project, No. 010TUKE-4/2012)  
- Laboratory Workplace for Electronic Course Controlled by IT Technology (E-Lab) (Ministry of Education of Slovak Republic KEGA Project, No. 029TUKE-4/2012)  
- The Use of Remote Controlled Optical Fibre Refractometer in Teaching (Ministry of Education of Slovak Republic KEGA Project, No. 063TUKE-4/2013)  
- Through-Wall Localisation of People by Means of Portable Ultra-Wideband Sensors (Project supported by DAAD and MŠVVaŠ)  
- Electromagnetic Compatibility of Technological Equipment in Tyre Industry (Project of Agency for Science and Research, No. APVV-0333-11)  
- Digital Signature Power Analysis Attack and Countermeasures (Project of Agency for Science and Research, No. APVV-0586-11)  
- Mitigation of Stochastic Effect in High-Bitrate All Optical Networks (Project of Agency for Science and Research, No. APVV-0025-12)  
- Persons Localization in 3D Under Emergency Event based on UWB Radar System (Project of Agency for Science and Research, No. APVV-0404-12)  
- The Research of Coexistence between Broadband LTE Networks and Digital Terrestrial TV Broadcasting DVB-T/DVB-T2 (Project of Agency for Science and Research, No. APVV-0696-12)  
- New Testing Methods for Analog-to-Digital Interfaces Based on the Error Model Identification (Scientific Grant Agency Project VEGA, No. 1/0555/11)  
- Security in Modern Telecommunication Networks (Scientific Grant Agency Project VEGA, No. 1/0386/12)  
- Short-Range UWB Sensor Networks for Detection, Localization and Tracking of Moving Persons (Scientific Grant Agency Project VEGA, No. 1/0563/13)  
- Development of the Center of Information and Communication Technologies for Knowledge Systems (Operational Program Research and Development, No. ITMS-26220120030)  
- Centre of Excellence of the Integrated Research & Exploitation the Advanced Materials and Technologies in the Automotive Electronics (Operational Program Research and Development, No. ITMS-26220120055)  
- Competency Centre for Knowledge Technologies applied at Innovation of Production Systems in Industry and Services (Operational Program Research and Development, No. ITMS-26220220155)
• Research of Modules for Intelligent Robotic Systems (Operational Program Research and Development, No. ITMS-26220220141)
• University Scientific Park TECHNICOM for Innovative Application with Support of Knowledge Technologies (Operational Program Research and Development, No. ITMS-26220220182)

6 CO-OPERATION

6.1 Co-operation in Slovakia
• Elcom s.r.o., Prešov
• Slovak Academy of Science
• Slovak Telekom, a.s.
• VUS - Výskumný ústav spojov, n.o., Banská Bystrica
• ZŤŠ výskumnovo-vývojový ústav Košice, a.s.

6.1.2. Visitors to the Department
• Delegation led by prof. Xiaofei Wang, Wuhan Technological Institute, Wuhan, China, July 25-27, 2013

6.2 International Co-operation
• Austrian Research Institute for Artificial Intelligence (OFAI) of the Austrian Society for Cybernetic Studies
• FTW Telecommunications Research Center Vienna, Austria
• Geozondas Ltd., Lithuania
• Ingenieur Büro Ralf Klukas, Germany
• INESC Lisabon, Portugal
• Instituto Superior Técnico (IST), Lisbon, Portugal
• Statens Räddningsverk, Sweden
• ŠkodaAuto Mladá Boleslav, Czech Republic
• Wuhan Technological Institute, Wuhan, China
• Second University of Naples, Italy
• Technische Universität Ilmenau, Germany
• Hamburg University of Technology, Germany
• AGH University of Science and Technology Krakow, Poland
• Gdansk University of Technology, Poland
• Bulgarian Academy of Sciences, Bulgaria
• Technische Universität Delft, Netherlands
• Universität Ramon Llull, Barcelona, Spain
• Universitat Politècnica de Catalunya Barcelona Tech (UPC), Barcelona, Spain
• Technical University Budapest, Hungary
• Technical University of Ljubljana, Slovenia
• Technical University of Cluj-Napoca, Romania
• University of Firenze, Italy
• University of Gent, Belgium
• University of Maribor, Slovenia
• University of Sannio, Benevento, Italy
• University of Reggio Di Calabria, Italy
• University of Gävle, Sweeden
6.2.1. Visit of Staff Members to Foreign Institutions

- Broda, M., University of Pardubice, Czech Republic  
  April 15-19, 2013
- Bugár, G., University of Zadar, Croatia  
  September 23-29, 2013
- Bánoci, V., University of Zadar, Croatia  
  September 23-29, 2013
- Cipov, V., TU Debrecen, Hungary  
  May 06-17, 2013
- Cipov, V., AGH University of Science and Technology Krakow, Poland  
  June 05-07, 2013
- Doboš, L., TU Debrecen, Hungary  
  May 06-10, 2013
- Doboš, L., University of Pardubice, Czech Republic  
  May 20-23, 2013
- Doboš, L., TU Ilmenau, Germany  
  May 28-31, 2013
- Doboš, L., AGH University of Science and Technology Krakow, Poland  
  June 05-07, 2013
- Doboš, L., Janov, Italy  
  Aug. 31 – Sept. 11, 2013
- Doboš, L., Malaga, Spain  
  October 09-12, 2013
- Drutarovský, M., Bonn, Germany  
  April 01-04, 2013
- Drutarovský, M., TU Ilmenau, Germany  
  April 06-13, 2013
- Drutarovský, M., VUT Brno, Czech Republic  
  June 10-12, 2013
- Drutarovský, M., Avignon, France  
  May 29 – June 01, 2013
- Drutarovský, M., Fréjus, France  
  June 22-27, 2013
- Drutarovský, M., BUTE Budapest, Hungary  
  Sep. 30 – Oct. 01, 2013
- Drutarovský, M., University of Freiburg, Germany  
  December 11-13, 2013
- Dupák, D., University of Pardubice, Czech Republic  
  April 15-19, 2013
- Fortes, J, TU Ilmenau, Germany  
  April 06-13, 2013
- Fortes, J., Tel Aviv, Israel  
  October 20-25, 2013
- Galajda, P., TU Ilmenau, Germany  
  April 06-13, 2013
- Galajda, P., VUT Brno, Czech Republic  
  June 17-18, 2013
- Galajda, P., TU Ilmenau, Germany  
  June 18-28, 2013
- Galajda, P., BUTE Budapest, Hungary  
  Sep. 30 – Oct. 01, 2013
- Galajda, P., EC, Brussels, Belgium  
  October 23-25, 2013
- Galajda, P., VUT Brno, Czech Republic  
  October 28-29, 2013
- Gallo, P., Leuven, Belgium  
  September 10-18, 2013
- Gazda, J., BUTE Budapest, Hungary  
  February 07, 2013
- Gazda, J., BUTE Budapest, Hungary  
  September 30, 2013
- Gamcová, M., TU Ilmenau, Germany  
  November 25-26, 2013
- Gamcová, M., TU Dresden, Germany  
  November 27-28, 2013
- Gamec, J., TU Ilmenau, Germany  
  November 25-26, 2013
- Gamec, J., TU Dresden, Germany  
  November 27-28, 2013
- Gladišová, I., TU Ilmenau, Germany  
  November 25-26, 2013
- Gladišová, I., TU Dresden, Germany  
  November 27-28, 2013
- Godla, M., BUTE Budapest, Hungary  
  Sep. 30 – Oct. 01, 2013
- Hládek, D., Hradec nad Moravicí, Czech Republic  
  September 04-06, 2013
- Juhár, J., EC, Brussel, Belgium  
  March 13-15, 2013
- Juhár, J., Avignon, France  
  May 29 – June 01, 2013
- Juhár, J., EC, Brussel, Belgium  
  September 11-14, 2013
- Juhár, J., TU Plzeň, Czech Republic  
  October 15-16, 2013
- Kažimír, P., BUTE Budapest, Hungary  
  December 09-12, 2013
- Kažimír, P., TU Ilmenau, Germany  
  Aug. 31 – Sept. 13, 2013
- Kiktová, E., TU Debrecen, Hungary  
  May 05-17, 2013
• Kiktová, E., AGH University of Science and Technology Krakow, Poland
  June 05-07, 2013
• Kocur, D., TU Ilmenau, Germany
  April 06-13, 2013
• Kocur, D., VUT Brno, Czech Republic
  June 10-12, 2013
• Kocur, D., TU Ilmenau, Germany
  June 18-28, 2013
• Kocur, D., Funchal, Portugal
  September 14-21, 2013
• Kocur, D., BUTE Budapest, Hungary
  September 30 – October 01, 2013
• Kocur, D., VUT Brno, Czech Republic
  October 10-11, 2013
• Kocur, D., EC, Brussels, Belgium
  October 23-25, 2013
• Lipták, J., BUTE Budapest, Hungary
  December 10-13, 2013
• Lojka, M., Gdansk, Poland
  February 03-07, 2013
• Lojka, M., AGH University of Science and Technology Krakow, Poland
  June 05-07, 2013
• Lojka, M., University of Zadar, Croatia
  September 24-27, 2013
• Marchevský, S., BUTE Budapest, Hungary
  September 30 – October 01, 2013
• Michaeli, L., Cosenza Rende, Italy
  January 28 – February 01, 2013
• Michaeli, L., Barcelona, Spain
  July 13-22, 2013
• Michaeli, L., VUT Brno, Czech Republic
  June 09-11, 2013
• Michaeli, L., BUTE Budapest, Hungary
  September 30, 2013
• Novák, D., TU Ilmenau, Germany
  October 12 – December 05, 2013
• Onďaš, S., TU Debrecen, Hungary
  May 06-10, 2013
• Papaj, J., Gdansk, Poland
  February 03-07, 2013
• Papaj, J., TU Ilmenau, Germany
  May 28-31, 2013
• Pastirčák, J., BUTE Budapest, Hungary
  September 30, 2013
• Pastirčák, J., Biel, Switzerland
  November 25-28, 2013
• Petrvalský, M., University of Pardubice, Czech Republic
  April 15-19, 2013
• Pleva, M., Gdansk, Poland
  February 03-07, 2013
• Pleva, M., Lisbon, Portugal
  April 03-06, 2013
• Pleva, M., AGH University of Science and Technology Krakow, Poland
  June 05-07, 2013
• Pleva, M., TU Bucharest, Romania
  June 06-09, 2013
• Pleva, M., Gdansk, Poland
  September 25-27, 2013
• Pleva, M., Nijmegen, Nederland
  October 13-15, 2013
• Pleva, M., Vilnius, Latvia
  November 05-08, 2013
• Staš, J., Hradec nad Moravici, Czech Republic
  September 04-06, 2013
• Staš, J., TU Ostrava, Czech Republic
  October 13-15, 2013
• Šaliga, J., Cosenza Rende, Italy
  January 28 – February 01, 2013
• Šaliga, J., Barcelona, Spain
  July 09-22, 2013
• Šaliga, J., BUTE Budapest, Hungary
  September 30 – October 01, 2013
• Varchola, M., Cancún, Mexico
  December 05-14, 2013
• Vavrek, J., TU Debrecen, Hungary
  May 05-17, 2013
• Vavrek, J., Roma, Italy
  July 01-06, 2013
• Vavrek, J., Barcelona, Spain
  October 17-21, 2013
• Viszlay, P., TU Debrecen, Hungary
  May 05-17, 2013
• Viszlay, P., Bucharest, Romania
  June 06-09, 2013

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.
• Galajda, P.: Member of the editorial board of the journal "Radioengineering".
• Galajda, P.: Member of EUROPRCTICE IC Service.
• Juhár, J.: Member of the ISCA (International Speech Communication Association).
• Juhár, J.: Member of EU Domain Committee COST for ICT (Information and Communication Technologies) – National Delegate.
• 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 of the journal "Slaboproudý obzor".
• Kocur, D.: Member of the editorial board of the journal "Acta Polytechnica Hungarica".
• Kocur Dušan, Member of the editorial board of the journal "Radioengineering".
• 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 the international board of IMEKO Technical Committee TC-4 "Measurement of Electrical Quantities".
• Šaliga, J.: Member of the editorial board of the journal "Radioengineering".
• 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 Electrotechonica et Informatica".
• Juhár, J.: Member of Technical Standardization Commission No.55 for Electroacoustics and ultrasound In Slovakia.
• Kocur Dušan, Member of committee of Scientific Grant Agency of the Ministry of Education of the Slovak Republic and of Slovak Academy of Sciences.
• Levický, D.: Member of the editorial board of the journal "Acta Electrotechonica 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”.
• Šaliga, J.: Scientific Grant Agency of Slovak Republic.
• Šaliga, J.: Member of scientific board of Slovak Institute of Metrology.
• 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
• Propagation Tools and Data for Integrated Telecommunication, Navigation and Earth Observation Systems (COST Action IC0802)
• Integrating Biometrics and Forensics for the Digital Age (COST Action IC1106)
• Trustworthy Manufacturing and Utilization of Secure Devices (COST Action IC1204)
• Wireless Power Transmission for Sustainable Electronics (COST Action IC1301)
• INDECT – Intelligent Information System Supporting Observation, Searching and Detection for Security of Citizens in Urban Environment (7.FP, Contract No 218086)
• European Digital Virtual Design Lab (518565-LLP-1-2011-1-BE-ERASMUS-ESMO)
• Technological Transfer Network (544197-TEMPUS-1-2013-1-IT-TEMPUS-JPHES)
• Wireless Sensor Network for Water Quality Monitoring (Hungary-Slovakia Cross-border Co-operation HUSK/1101/1.2.1/0091)

7 THESES

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8 PUBLICATIONS

8.1 Books
8.2 Textbooks


8.3 Journals


### 8.4 Other publications

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<tr>
<td>Number</td>
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1 DEPARTMENT'S PROFILE

The Department belongs to the first departments, established at foundation of the Faculty of Electrical engineering (founded in 1969). In 2005 staff members from the Laboratory of Industrial Engineering joined the department and it was renamed to Department of Electrical, Mechatronic and Industrial Engineering that was changed to Department of Electrical Engineering and Mechatronics in the year 2010.

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 2 branches, two master courses and two Ph.D. courses).
2 STAFF

Professors: prof. Ing. Jaroslav Dudrik, PhD.
prof. Ing. Pavol Fedor, PhD.
prof. Ing. Daniela Perduková, PhD.
prof. Ing. Pavel Záskalický, PhD.

Associate Professors: doc. Ing. František Šurovský, PhD.
doc. Ing. Viliam Fedák, PhD.
doc. Ing. Želmíra Ferková, PhD.
doc. Ing. Michal Girman, PhD.
doc. Ing. Jaroslava Žilková, PhD.

Assistant Professors: Ing. Peter Bober, PhD.
Ing. Peter Girovský, PhD.
Ing. Ján Kaňuch, PhD.
Ing. Milan Lacko, PhD.
Ing. Karol Kyslan, PhD.

Senior Scientists: Bc. Peter Hajsák
Ing. Michal Pajkoš

Technical Staff: Ing. Gabriela Brečková
Zuzana Olexová
doc. Ing. Michal Kostelný, PhD.
prof. Ing. Jaroslav Timko, CSc.

Full time Ph.D. Students: Ing. Ján Bačík
Ing. Mišel Batmed
Ing. Godem Ali M. Ismeal
Ing. Marek Pástor

Ing. Radoslav Sivý
Ing. Viktor Šlapák
Ing. Marek Vacek

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 Automotive Mechatronics
• Laboratory of Pneumatic and Hydraulic Drives
• Virtual Laboratory of Technological Processes Control by Programmable Logic. www.virtual.labatory.kempi.fei.tuke.sk
• Virtual Laboratory of Mechatronic Systems Control: http://andromeda.fei.tuke.sk
• Laboratory for Integrated Mechatronic Modules for Adaptive Drives. Joint Laboratory of Department of Electrical Engineering and Mechatronics TU Košice, ZTS VVÚ Košice, a.s. and SPINEA, s.r.o. Prešov.
## 4 TEACHING

### 4.1 Undergraduate Study (Bc.) - Electrical Engineering (until August 2013)

<table>
<thead>
<tr>
<th>Subject</th>
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<th>Lectures/exercises (hours per week)</th>
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<td>Kaňuch</td>
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<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
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<tr>
<td>Microprocessor Techniques</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
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<td>Lacko</td>
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<td>Electrical Drives and Power Electronics</td>
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<td>2/2</td>
<td>Záskalický</td>
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<td>Man-Machine Interfaces</td>
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<td>2/2</td>
<td>Perduková</td>
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<td>Semiconductor Supplies and Converters</td>
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<td>Fedor</td>
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<td>Durovský</td>
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<td>Ferková</td>
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<td>Bachelor Thesis II.</td>
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### 4.2 Undergraduate Study (Bc.) - Automation of Mechatronics Systems (until August 2013)

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<th>Lectures/exercises (hours per week)</th>
<th>Lecturer</th>
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<td>Computer Applications</td>
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<td>Žilková</td>
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<td>ManMachine Interface</td>
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<td>2/2</td>
<td>Girovský</td>
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<tr>
<td>Pneumatic nad Hydraulic Drives</td>
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<td>Bober</td>
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### 4.3 Undergraduate Study (Bc.) - Industrial Engineering (until August 2013)

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4.4 Undergraduate Study (Bc.) - Control of Electromechanical Systems (since September 2013)

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<td>Controlled Electrical Drives</td>
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<td>Microprocessor Technique</td>
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<td>ManMachine Interface</td>
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<td>Projecting of Electrical Systems</td>
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<td>Pneumatic and Hydraulics Drives</td>
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<td>Statistical Process Control</td>
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<td>3D Modelling and Simulation</td>
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<td>Signal Processors</td>
<td>9th</td>
<td>2/2</td>
<td>Lacko</td>
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<tr>
<td>Enterprise Control Management</td>
<td>9th</td>
<td>2/2</td>
<td>Girman</td>
</tr>
<tr>
<td>Power Electrical Systems</td>
<td>9th</td>
<td>2/2</td>
<td>Kolcun</td>
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<tr>
<td>Technology of Production in Electrotechnics</td>
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<td>2/2</td>
<td>Girman</td>
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### 4.6 Graduate Study (Ing.) - Automation of Mechatronic Systems (until August 2013)

<table>
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<tr>
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<td>Fedák</td>
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<td>Non-linear Mechatronic Systems</td>
<td>7th</td>
<td>2/2</td>
<td>Fedor</td>
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<td>7th</td>
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<td>Dudrik</td>
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<td>Semester Project</td>
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<td>0/4</td>
<td>Fedor</td>
</tr>
<tr>
<td>Control of Production Systems by PLC</td>
<td>8th</td>
<td>2/2</td>
<td>Fedor</td>
</tr>
<tr>
<td>Electrical Machines for Automation</td>
<td>8th</td>
<td>2/2</td>
<td>Ferková</td>
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<td>Robotics</td>
<td>8th</td>
<td>2/2</td>
<td>Žilková</td>
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<td>Database Systems</td>
<td>8th</td>
<td>2/2</td>
<td>Perduková</td>
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<td>Girman</td>
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<td>2/2</td>
<td>Ďurovský</td>
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<td>Girman</td>
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<td>Žilková</td>
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### 4.7 Graduate Study (Ing.) - Electrical Engineering (since September 2013)

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<td>Non-linear Mechatronic Systems</td>
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<td>2/2</td>
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<td>7th</td>
<td>2/2</td>
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<td>2/2</td>
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### 4.8 Postgraduate Study (PhD.) - Electrical Engineering

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<td>Ph.D. Project II</td>
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### 4.9 Postgraduate Study (PhD.) - Mechatronic Systems

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<td>Dept. of Foreign Languages</td>
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5 RESEARCH PROJECTS

- **Research of power semiconductor converters with high efficiency of electric energy conversion.** APVV - 0185-10 (Slovak Research and Development Agency), 2011-2014. Principal investigator: DUDRIK, J.


- **Research and development of a small power drives with two-phase motors,** APVV-0138-10, 2011-2014, Coordinator: Záskalický, P.

6 CO-OPERATION

6.1 Co-operation in Slovakia


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 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

- **DUDRIK, J., KYSLAN, K.:** EDPE 2013, Dubrovnik, Croatia, 2-4 October 2013
- **ĎUROVSKÝ, F.:** Workshop at EUROMECE, Clusterland OÖ GmbH, Linz, (AT) 5-7 March 2013.
- **ĎUROVSKÝ, F.:** Johannes Kepler University, Linz, (AT), 7 March 2013.
- **ĎUROVSKÝ, F.:** Internationales Forum Mechatronik 2013, Winterthur (CH), 30-31 October 2013.
- **ĎUROVSKÝ, F.:** Department of Production Machines and Equipment, CVUT Prague, 28-29 November 2013.
- **FÉRKOVÁ, Ž.:** ISEM 2013, ČVUT Praha (CZ), 10-12 September 2013,
- **FÉRKOVÁ, Ž.:** EDPE 2013, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
- **FÉRKOVÁ, Ž.:** TechSoft Praha, TU Liberec(CZ), 24.-27. April 2013.
- **KANUCH, J., FÉRKOVÁ, Ž.:** ZČU Plzeň (ČR), 21-25 Januar 2013.
- **KANUCH, J., FÉRKOVÁ, Ž.:** Akademia morska, Gdynia (PL), 16-19 June 2013.
- **KANUCH, J.:** Univerzita Pardubice, Pardubice (ČR), 10-12 September 2013.
- **KYSLAN, K.; LACKO, M; ŠLAPÁK, V.:** 33.konferencia o elektrických pohonech, Pilsen (CZ), 10.-14. June, 2013.
- **PERDUKOVÁ, D.:** SOCO 2013, Salamanca, Spain. 11–13 September 2013

6.3 Membership in International Organizations, Societies and Committees

- **DUDRIK, J. – IEEE member**
- **DUDRIK, J., FEDÁK, V., TIMKO, J.:** Power Electronics and Motion Control Council EPE-PEMC – Budapest. Council and Steering Committee members.
- **FEDÁK, V.:** EPE – European Power Electronics and Drives Association, Brussels. Executive Council member, General Assembly member, ISC
- **FEDÁK, V.:** EDPE 2013, Dubrovnik. Conference Co-chairman.
- **FEDÁK, V.:** IEEE ICETA 2013, Starý Smokovec. Program Chairman
- **FÉRKOVÁ, Ž: member of Steering Committee ISEM (INTERNATIONAL SYMPOSIUM ON ELECTRIC MACHINERY) ČVUT Praha.**
- **FÉRKOVÁ, V: EDPE 2013, Dubrovnik, Co-chairman.**
- **FEDOR, P.:** member of Programme Committee: 8th International Conference on Soft Computing Models in Industrial and Environmental Applications – SOCO 2013, Salamanca, Spain.
- **PERDUKOVÁ, D.:** member of Programme Committee: 8th International Conference on Soft Computing Models in Industrial and Environmental Applications – SOCO 2013, Salamanca, Spain.
- **ZÁSKALICKÝ, P.:** member of Programme Committee: 17th International Conference Electronics 2013, Palanga, Lithuania.
- **ZÁSKALICKÝ, P.:** member of Programme Committee: 49th International Conference SME 2013, Gdynia, Poland.

6.4 Membership in Slovak Professional Bodies

- FEDÁK, V.; KAŇUCH, J.; TIMKO, J.; ZÁSKALICKÝ, P.: 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 FEEI TU Košice) - by September 2013
- FEDOR, P.: member of board for the PhD. Course in Mechatronic Systems at FEI TU Košice.
- FERKOVÁ, Ž.: member of Technical Standards Commission on Electrical Machines in SR
- PERDUKOVÁ, D.: member of board for the PhD. Study in Electrical Engineering at FEI TU Košice
- PERDUKOVÁ, D.: member of board for the PhD. Study in Mechatronic systems at FEI TU Košice
- PERDUKOVÁ, D.: member of Accreditation Commission working group for research in Electrical and Power Engineering
- TIMKO, J. (Vice-chairman); FEDÁK, V.; FEDOR, P.; DUDRIK J. - members of Joint Slovak Board for the Ph.D. Study in Electrical Engineering
- TIMKO, J. (chairman), GIRMAN, M., KOVÁČOVÁ, I., FEDOR, P., FEDÁK, V., DUDRIK, J.: members of board for the PhD. Study in Electrical Engineering at FEI TU Košice
- TIMKO, J.: member of board for the PhD. Study in Electrical Engineering at EF ZU Žilina
- TIMKO, J.: member of board for the PhD. Study in Mechatronics at SjF TU Košice
- ZÁSKALICKÝ, P.: member of board for the PhD. Study in Electrical Engineering at EF ZU Žilina
- ZÁSKALICKÝ, P.: member of board for the PhD. Study in Electrical Engineering at FEI TU Košice
- ZÁSKALICKÝ, P.: member of board for the PhD. Study in Mechatronic systems at FEI TU Košice

6.5 National Educational Projects

- Teaching innovation in control of mechatronic systems. KEGA 042TUKE-4/2012. Coordinator: LACKO, M.
- E-MLAB a set of original laboratory workstations to support and extend research and teaching laboratories in the field of Mechatronics. KEGA 011TUKE-4/2013. Coordinator: PERDUKOVÁ, D.

6.6 Editorial Boards

- BOBER, P. Editorial board for journal “Quality, Innovation, Prosperity” (Kvalita, Inovácia, Prosperita), ISSN 1335-1745 (print), ISSN 1338-984X (online).
- DUDRIK, J. – Member of the Series Editorial Board of Annals of the Academy of Romanian Scientists.
• DUDRIK, J.: Editorial board of Transactions on electrical engineering, Czech Republic, ISSN 1805-3386
• FEDÁK, V.: Editorial board of Scientific Works of the Institute of Electrical Machines Drives and Measurement (Wroclaw Univ. of Technology), ISSN 0033-2097
• FEDOR, P.: Editorial board of Acta Electrotechnica et Informatica – AEI. Journal of the Faculty of Electrical Engineering and Informatics. ISSN 1335-8243.
• PERDUKOVÁ, D.: Editorial board of Elektroenergetika journal, ISSN 1337-6756.
• ZÁSKALICKÝ, P.: Editorial board of KOMEL, Branzowy osrodek badawczo-rozwojowy Maszyn elektrycznych, Katowice, Poland. ISSN 0239-3646.

7 THESES

7.1 Defened Ph.D. Theses
• JUŠKO, Š.: Nonlinear control of dual axis mechanical system. Supervisor: Fedor, P.

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8 OTHER ACTIVITIES

8.1 Symposia, Workshops, Conferences

8.2 Projects for Industry
• Methodology of Main Winders Drive Optimization on Hot Roll Mill. For U.S.Steel Košice. P-104-0012/13, Co-ordinator: Ďurovský, F.

8.3 Student Competitions and Rewards
• BAČÍK Ján: Week of Science and Technology in Slovakia 2013, (18 November 2013). 1st place for the best doctoral thesis

8.4 Compositions for Dissertation Examinations
• VACEK, M.: Optical robotic workplace safety system. Supervisor: Žilková, J.
9  PUBLICATIONS

9.1 Books

9.2 Textbooks


9.3 Scientific Journals

Current Journals


Foreign Journals


Foreign Journals indexed in Web of Science or Scopus databases


National Journals indexed in Web of Science of Scopus databases


National Journals
9.4 Other publications

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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 ferromagnetic materials and on the study of non-metallic materials using nuclear magnetic resonance (NMR) and some other complementary methods.

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 2009 the Solid State NMR Laboratory was established at the department. The laboratory is a part of the Slovak National NMR Centre and its research is focused on the study of non-metallic materials. The role of the laboratory is to meet research and educational requirements in the field of solid state NMR study of materials in Slovakia. The laboratory contributes to the development of solid state NMR applications in Slovakia.

Recently the Laboratory for modification and testing of properties of advanced materials has been established at the department within the project "Centre of Excellence for Integrated Research & Exploitation of Advanced Materials and Technologies in Automotive Electronics" (2010-2013). The laboratory is equipped with apparatus for the study of thermal and mechanical properties of materials and a desk top electron microscope for the study of surface structure 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.

Since 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 good adaptability of graduates in various fields of electrotechnics, electronics and related fields.

2 STAFF

Professors: prof. RNDr. Vladimír Lisý, DrSc.

Associate Professors: doc. RNDr. Júlia Hlaváčová, CSc.
doc. RNDr. Ladislav Novák, CSc.
doc. RNDr. Dušan Olčák, CSc.
doc. RNDr. Ján Ziman, CSc.

Assistant Professors:
RNDr. Anton Baran, PhD. (since 1.8.)
RNDr. Oľga Fričová, PhD.
RNDr. Zuzana Gibová, PhD.
RNDr. Viktor Hronský, CSc.
RNDr. Lubomír Mucha
RNDr. Mária Hutníková, PhD.
RNDr. Ján Kecer, PhD.
RNDr. Mária Kladivová, PhD.
RNDr. Jožef Kravčák, PhD.
RNDr. Cyril Hospodár (till 31.5.)
Ing. RNDr. Jožef Onufriev, PhD.
RNDr. Ladislav Ševčovič, PhD.
RNDr. Peter Vrábel, PhD.

PhD. Students:
Mgr. Peter Duranka
Mgr. Lukáš Hubač
Ing. Viktória Šuhajová
Mgr. Magdaléna Uhrinová

Technical Staff:
Ema Havlíková (till 30.6.)
Ing. František Mižák
Alena Jakabová
3 LABORATORIES

3.1 Teaching and Research Laboratories
- Students laboratories for basic course in physics
- Solid state NMR laboratory
- Laboratory for magnetic measurements
- Laboratory of physics of macromolecular systems
- Laboratory of advanced materials

3.2 Special Measuring Instruments
- Multinuclear solid state NMR spectrometer Varian 400 MHz
- Experimental apparatus for the study of magnetization characteristics (magnetization curve, susceptibility, magnetoresistance) of ferromagnetic materials
- Desktop electron microscope with disperse rtg spectrometer
- DSC analyser
- Dynamic mechanical analyser
- Sputtering apparatus
- Rotational highly sensitive viscometer of the Couette type Viscodens
- Vibrational viscosimeter SV – 10
- Rotational modular compact rheometer (MCR 502)
- Capillary automated micro viscometer (AMVn)
- DMA 4500 M density meter

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.)

<table>
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<td>Zíman, Lisý</td>
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<td>Physics 1 (FBERG)</td>
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## 4.2 Graduate Study (Ing.)

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<td>Ziman</td>
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<td>2/2</td>
<td>Kravčák</td>
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<td>Modern magnetic materials</td>
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<td>2/2</td>
<td>Novák</td>
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</table>
5 RESEARCH PROJECTS

- **Study of biodegradable polymeric materials using NMR spectroscopy**, S.G.A. project No. 1/0492/13, Principal investigator: doc. RNDr. Dušan Olčák, CSc.


- **Anomalous Brownian motion**, S.G.A. project No. 1/0370/12, Principal investigator: prof. RNDr. V. Lisý, DrSc.


- **Domain wall dynamics in thin ferromagnetic wires**, APVV project, No. APVV-0027-11. Principal investigator: doc. RNDr. R. Varga, PhD., Faculty of Science, Pavol Jozef Šafárik University in Košice, co-operating organisation: Technical University of Košice, collaborators: J. Ziman, M. Kladivová, J. Onufer, J. Kravčák, V. Šuhajová

- **Development of the new generation of environmental adsorbents and biocomposites based on the natural nanomaterials**, S.G.A. project No. 1/0185/12. Principal investigator: Prof. RNDr. E. Chmielewská, CSc. (Faculty of Science, Comenius University in Bratislava), collaborators: M. Koivaľaková

- **Completion of building of the centre for cooperative phenomena and phase transitions in nanosystems with perspective applications in nano- and biotechnology**, Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU, project No. 26220120033, Principal investigator: doc. RNDr. Peter Kopčanský, CSc. (Institute of Experimental Physics, SAS Košice), collaborators: J. Tóthová, V. Lisý


- **International Virtual Laboratory of the Physics of Progressive Materials**, Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU, project No. 26110230097, Principal investigator: doc. RNDr. Peter Kopčanský, CSc.
(Institute of Experimental Physics, SAS Košice), collaborators: J. Tóthová, V. Lisý


- **Progressive constructions and technologies in transportation engineering**, Slovak Research and Development Agency, project No. SUSPP-0013-09, Principal investigator: doc. Ing. Jan Mandula, PhD., Technical University of Košice, collaborator: M. Kovaľaková


6 **CO-OPERATION**

6.1 Co-operation in Slovakia

- Faculty of Chemical and Food Technology, Slovak University of Technology, Bratislava
- Faculty of Science, Comenius University in Bratislava
- Institute of Experimental Physics of the Slovak Academy of Sciences, Košice
- Institute of Inorganic Chemistry of the Slovak Academy of Sciences, Bratislava
- Institute of Physics, Faculty of Science, P. J. Šafárik University in Košice
- Joint Laboratory of Glass VILA, Alexander Dubček University of Trenčín
- Polymer Institute, Slovak Academy of Sciences, Bratislava

6.1.1. Visitors to the Department

- Doc. Dr. Antal Lovas, PhD., Budapest University of Technology and Economics, Hungary
- RNDr. Jiří Spěváček, DrSc., Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic

6.2 International Co-operation

- Budapest University of Technology and Economics, Hungary
- Central Physical Research Institute, RMKI KFKI, Budapest, Hungary
- Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic
- 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
- Gibová, Z.: member of the Slovak Physical Society (SFS)
- Hronský, V.: member of SFS and the Slovak Magnetic Society (SMAGS)
- Jelšovská, K.: member of SFS
- Kecer, J.: member of SMAGS
- Kladivová, M.: member of the Slovak Physics Olympiad, SFS, and SMAGS
- Kovaľaková, M.: member of SFS
- Kravčák, J.: member of SFS, treasurer of SMAGS
- Lisý, V.: Scientific Grant Agency of the Slovak Republic, 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), member of the Working Group for Physics of the Accreditation Commission Counselling Body of the Government of the Slovak Republic, member of the permanent commission for the awards of DrSc. degrees in Condensed Matter Physics and Acoustics, member of SFS, Member of the Programme and Advisory Committee for Condensed Matter, Joint Institute for Nuclear Research, Dubna, Russia
- Mucha, Ľ.: vice-president of the Slovak Physics Olympiad, member of SFS
- Novák, L.: member of SFS and SMAGS
- Olčák, D.: member of SFS and SMAGS
- Onufer, J.: member of SFS and SMAGS
- Tóthová, J.: member of SFS
- Ziman, J.: member of SFS and vice-chairman of SMAGS

7 THESES

7.1 PhD. Theses

7.2 Habilitation Theses

8 PUBLICATIONS

8.1 Books
8.2 Journal Papers

http://link.springer.com/article/10.1007%2Fs10765-012-1379-6#


8.3 Other publications

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1 DEPARTMENT'S PROFILE

The Department (DCAI) is responsible for education in the following bachelor study programs: Cybernetics, Intelligent Systems, and Business informatics; in the following master study programs: Cybernetics and Information-Control Systems, Artificial Intelligence, Business Informatics; and following PhD-study programs: Cybernetics and Information-Control Systems, Artificial Intelligence, and 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 business information systems.

The predecessor of the Department was founded in 1964. Department of Cybernetics and Artificial Intelligence was adapted in 1989. Currently it has 26 staff members, 26 internal and 11 external Ph.D. students. There are 3 research centers within the department: Center of Intelligent Technologies, Center of Applied Cybernetics and Center of Business Informatics (http://web.tuke.sk/kkui/en/vyskumne-skupiny-a-projekty). The Department is involved in a number of research and educational projects.

2 STAFF

Professors: prof. Ing. Dušan Krokašec, CSc.
Dr.h.c. prof. Ing. Ladislav Madařász, CSc.
prof. RNDr. Eva Ocelíková, CSc.
prof. Ing. Ján Paralič, PhD.
prof. Ing. Tomáš Sabol, CSc.
prof. Ing. Ján Sarnovský, CSc.
prof. Ing. Peter Sinčák, CSc.
prof. Ing. Iveta Zolotová, 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.

Assistant Professors: Ing. František Babič, PhD.
Ing. Peter Butka, PhD.
Dr. Ing. Vratislav Hladký
Ing. Rudolf Jakša, PhD.
Ing. Ján Liguš, PhD.
Ing. Jana Ligušová, PhD.
Ing. Martin Sarnovský, PhD.
Dr. Ing. Ján Vaščák

Researchers: Ing. Marek Bundzel, PhD.
Ing. Jozef Wagner, PhD.
Ing. Gabriel Tutoky, PhD.

Technical Staff: Tatiana Baňasová
Jakub Šterbák
Ph.D. Students:

1st.

Internal
Ing. Tomáš Cádrik
Ing. Michal Kopčík
Ing. Tomáš Lojka
Ing. Gergely Magyar
Ing. Ladislav Nyulászi
Ing. Michal Puheim
Ing. Eva Turňová

External
Ing. Miloš Žos

2nd.

Internal
Ing. Radoslav Bielek
Ing. Jakub Čerkala
Ing. Cecília Havrilová
Ing. Pavol Liščinský
Ing. Daniel Lorenčík
Ing. Peter Michalík
Ing. Martina Tarhaničová

External
Ing. Ján Adamčák
Ing. Ladislav Miženko
Ing. Matúš Molčányi

3rd.

Internal
Ing. Vladimír Gašpar
Ing. Slávka Jadlovská
Ing. Alexandra Lukáčová
Ing. Martin Paňa
Ing. Peter Papcun
Ing. Vladimír Serbák
Ing. Ján Štofa

External
Ing. Mousa Younes Alfitorey
Ing. Róbert Fónod
Ing. Jan Liguš
Ing. Peter Szabó

4th.

Internal
Ing. Matej Čopík
Ing. Pavol Jasem
Ing. Mgr. Peter Koncz
Ing. Roman Mihaľ
Ing. Mária Virčíková

External

5th.

External
RNDr. Marcel Kudláč
Ing. Stanislav Dvorščák
Ing. Peter Kubičko

3 LABORATORIES

- CyberVirtLab - http://cybervirtlab.fei.tuke.sk/CybervirtLab/
- Laboratory of Intelligent Control Network and Software Systems for Control (L-509b), http://cybereducentre.fei.tuke.sk/L509/
- Laboratory of Cybernetics (L-513) http://web.tuke.sk/kybernetika/labaky/L513/
• Laboratory of Distributed Control Systems - ROCKWELL AUTOMATION LABORATORY (L-536), http://lara.feituke.sk/en/
• Center for Intelligent Technologies: Laboratory of Autonomous Systems (LAS-CIT), Laboratory of Humanoid Robots (LHR-CIT) http://www.ai-cit.sk
• Research Center of Modern Control Techniques and Industrial Informatics – CMCT_II (http://kyb.feituke.sk)
• Laboratory of Production Lines and Image Recognition (V147 - CMCT_II) http://kyb.feituke.sk/lab/en/miest/V147.php
• Laboratory of Process Control (V144 - CMCT_II) http://kyb.feituke.sk/Laboratoria/miest/V144.php
• Laboratory of Mechatronics Systems (V142 - CMCT_II) http://kyb.feituke.sk/Laboratoria/miest/V142.php
• Laboratory of Robotics (V134 - CMCT_II) http://kyb.feituke.sk/Laboratoria/miest/V134.php
• Laboratory of Knowledge Technologies (V-101a)
• Laboratory of Computer Control Systems Design (V101b - CMCT_II), http://kyb.feituke.sk/laben/miest/V101b.php
• Laboratory of intelligent control systems of aircraft engines (in cooperation with Faculty of Aeronautics) http://lrslm.feituke.sk
• Laboratory of Business processes (B11)

4 TEACHING

4.1 Undergraduate Study (Bc.)

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<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
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<tr>
<td>Computers and Algorithms</td>
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<td>Jadlovská, Jadlovský</td>
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<td>Introduction to Business Informatics</td>
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<td>Paralič, J.</td>
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<td>Elements of Control Systems</td>
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<td>Simulation systems in Business Informatics</td>
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</table>
5 RESEARCH PROJECTS

- **Cognitive travelling in digital space of the Web and digital libraries supported by personalized services and social networks** (project lead by FIIT STU Bratislava), Slovak Research and Development Agency, project no. APVV-0208-10, duration: 2011 – 2014, members: Ján Paralič (project leader for TUKE), Peter Butka, Peter Koncz, František Babič, Gabriel Tutoky. Activities: The metaphor of cognitive travelling in the digital space describes a (curious) user who moves in the web or libraries. Travelers leave traces in digital space – evaluations, recommendations, annotations etc. They communicate with others forming communities of shared interests. Users learn more if the information is suitably presented or visualized. Designed and implemented models and prototypes of web services will make use of descriptions of semantics of a given domain, documents and user profile (ontologies, folksonomies). Methods will include both targeted search (e.g. query enrichment or reformulation before submitting to search engines, discovering users’ specific needs) and also an exploratory search (browsing information sources without having a precise goal). This research contributes to shifting from providing documents in response to a query to providing answers.

- **Dynamic hybrid architectures in multiagent network control systems**, Scientific Grant Agency project No. 1/0286/11, duration: 2011 – 2014, members: Ján Sarnovský (project leader), Ján Liguš, Vratislav Hladký, Ján Jadlovský, Anna Jadlovská, Iveta Zolotová, Eva Ocelíková, Jana Ligušová, Peter Karch, Slávka Jadlovská, Peter Papcun, Jakub Čerkala, Štefan Jajčišin and Michal Kopčík. Activities: The project aims to research methods and algorithms for decision making and management of automatic control systems using the paradigm of hybrid approaches to managing complex systems utilizing methods of artificial intelligence. A tighter focus of the project is research, development and implementation of algorithms and methods for managing multi-agent network management systems (MANMS), where particular agents of MASRS cooperate and communicate via Wifi stochastic communication network. Based on MASRS modeling and formalizing of control processes will be further developed specific algorithms for optimal reconfiguration of MASRS architecture, taking into account redundancy to achieve the best quality of control for the selected MANMS configuration. When designing the control algorithms theoretical knowledge of cybernetics and information theory will be used with application of Ashby’s law of requisite Variety. The project is also intended to formalize the design of control algorithms and design of dynamic network architectures of industrial network management systems, which will be verified in the lab as well as in practice, in cooperation with the U. S. Steel Košice, Cybernetics Ltd., Košice and MDJ Ltd., Košice.

- **Digital control of complex systems with two degrees of freedom**, Scientific Grant Agency project No. 1/0298/12, duration: 2012 – 2014,
members: Ladislav Madarász (project leader), František Adamčík (project vice leader), Rudolf Andoga (project vice leader), Ladislav Főző, Tobiáš Lazar, Jozef Považan, Marián Hocko, Ján Kabát, Jozef Judičák, Ján Kolesár, Milan Seman, Vladimír Gašpar, Vratislav Hladký, Ján Labun, Peter Malatin, Michal Puheim, Ladislav Nyulásszí, Maroš Komjáty, Marek Češkovič and Róbert Bréda. Activities: The proposed project is aimed on research of progressive methods of control for complex systems with orientation at the complex systems with several degrees of freedom. In the area of design, the main aim will be the research of situational control methods with the use of artificial intelligence (neural networks, fuzzy inference systems, expert systems). The particular methodological contribution of the project will be the expected integration of the proposed control algorithms with modern approaches in modeling of complex systems, intelligent diagnostics and digital measurement - action elements. The proposed methods and their generalization will be tested in laboratory conditions in the area of aircraft turbo-compressor engines on the particular object of a small turbojet engine MPM-20. The scientific goals of the project can be decomposed into three thematic areas: modeling of complex systems, control of complex systems and diagnostics of complex systems. The real object for application of the proposed methods will be a small turbojet engine MPM-20 as a complex multi-parametric system with two control inputs and several outputs.

- **Integrated design of reconfigurable control structures and embedded diagnostics**, Scientific Grant Agency project No. 1/0256/11, duration: 2011 – 2013, members: Dušan Krokavec (project leader), Filasová Anna, Hladký Vratislav, and Daniel Gontkovič. Activity: The project is focused on design of fault-tolerant control systems (FTCS). The basic research is fundamental part of the project, which is driven for active FTCS with embedded diagnosis in suitable reconfigurable structures, undertaken in performance of the fault detector embedded in the control loop, and constructed in the framework of the integrated design. The focal scientific points of the project are dedicated to development of new design algorithms guarantying stability of fault-tolerant systems and optimized with respect to conflicting requirements among stability, redundancy, and graceful performance degradation; the terminal scientific objectives are dedicated to residual signals embedded in the control loop, with explicit consideration on residual decoupling and evaluation, reconfiguration control methods, as well as to appropriate procedures associated with decoupling of interacting multiple control structures.

- **Methods for analysis of collaborative processes mediated by information systems**, Scientific Grant Agency project No. 1/1147/12, duration: 2012 – 2015, members: Ján Paralič (project leader), František Babič, Kristína Machová, Martin Sarnovský, Peter Butka, Karol Furdiš, Gabriel Tutoky, Jozef Wagner, Martin Repka, Peter Koncz, Adela Tušanová, Alexandra Lukáčová, Ján Štofa, Cecilia Havrilová, Eva Turňová. Activities: This project focuses on research of methods for analysis of collaborative processes, which are mediated by information systems. In these processes collaboration of more people is necessary in order to achieve a common goal. This common goal is usually some kind of artifact (e.g. a product, service, method or new knowledge in explicit form). We focus on the following aspects: 1. Process aspect – methods for analysis of sequences of
events in these collaborative processes. 2. **Social aspect** – methods for analysis of various types of interactions between actors of collaborative processes, especially: a. Analysis of collaborative networks derived from interactions between process' actors, b. Sentiment analysis in such kind of processes, where (at least some) activities are available in textual form. 3. **Economical aspect** – methods suitable for evaluation of changes in collaborative processes caused by information systems’ usage.

- **CyberLabTrainSystem - Demonstrator and Trainer of Information - Control Systems**. Cultural and Education Grant Agency Project No. 021TUKE-4/2012, duration 2012 – 2014, members: Iveta Zolotová (project leader), Anna Jadlovská, Eva Ocelíková, Ján Jadlovský, Ján Sarnovský, Vratislav Hladký, Ján Liguš, Jana Ligušová, Peter Karch, Roman Mihaľ, Peter Kubičko, Štefan Jajičišin, Slávka Jadlovská, Peter Michalík, Jakub Čerkala, Lukáš Laciňák. Activities: The main project objective is the creation of demonstrational and training laboratory workplace to support teaching within the development and run-time use of information-control systems for different levels of factory control from the physical processes at the lowest to the visualization and data management at the highest level. Project outputs will support the development of theoretical knowledge of students and its transformation into practical skills through a life cycle of comprehensive 3/17 identifier: 1304075960 CyberLabTrainSystem - demonstrator and trainer of information-control system real project with different access (also web access) and user rights and roles. The project supports the possibility to acquire different approaches and software products intended to promote designing of information-control systems. The project should supplement classical teaching students also with the support of Web-based Training technology, and increase interest of candidates for study in the Cybernetics field.

- **Progressive methods of education in the area of control and modeling of complex systems object oriented on aircraft turbo-compressor engines**, Cultural and Education Grant Agency Project No. 018TUKE-4/2012, duration 2012 – 2014, members: : Ladislav Madarász (project leader), Rudolf Andoga (project vice leader), František Adamčík, Ladislav Főző, Tobiáš Lazar, Jozef Považan, Marián Hocko, Ján Kabát, Jozef Judičák, Ján Kolesár, Milan Seman, Vladimír Gašpar, Ján Labun, Peter Malatin, Michal Puheim, Ladislav Nyulászi, Maroš Komjáty, Marek Čechovič and Róbert Bréda. The project is aimed on use of the small turbojet engine MPM-20 in the area of education in connection with the concluded project KEGA 001-010TUKE-4/2010, “The use of intelligent methods of control and modeling of aircraft engines in educational process”. The global aim of the project is to create grounds for an e-learning application and education by use of virtualization of the „Laboratory of Intelligent Control Systems of Aviation Engines“ and its multiplatform distance use. The upgrade of physical system of sensors, action elements and constructional enhancement of the object MPM-20 will allow students to Access modern Technologies used in control of large scale systems together with realization of a multimedia classroom. The studied area can be directly applied in subjects of university studies dealing with diagnostics, modeling and control of complex systems with perspective use in real-world practice.
• **Virtual laboratory for business information systems**, Cultural and Educational Grant Agency project No. 065TUKE-4/2011, duration: 2011 - 2013, members: Ján Paralič (project leader), František Babič, Kristína Machová, Martin Sarnovský, Karol Furdík, Peter Butka, Peter Bednár, Gabriel Tutoky, Jozef Wagner, Adela Tušanová, Peter Koncz, Alexandra Lukáčová, Ján Šťořa, Eva Turňová. Activity: This project focuses on development and implementation of supporting on-line tools for education of selected courses in Business information systems at the Technical University in Košice. For this purpose there were designed and implemented electronic educational materials for particular courses, as well as suitable electronic services for active participation of students in virtual learning environment (including social network support and analysis), as well as methodology for Web based Training.

• **Development of a Modern University Textbooks for a Core Units of the Newly Transformer Study Programme Cybernetics and Information Control Systems**, Cultural and Educational Grant Agency project No. 034TUKE-4/2011, duration: 2011–2013, members: Anna Jadlovská (project leader), Ján Sarnovský, Iveta Zolotová, Ján Jadlovský, Vratislav Hladký, Ján Liguš, Jana Ligušová, Marek Bundzel, Luboš Popovič, Matej Čopík, Štefan Jajičišin, Slávka Jadlovská, Peter Papcun. Activity: The objective of the project is the preparation, design and implementation of a number of modern university textbooks, the content of which will be methodically processed using the current level of knowledge in the discipline of "cybernetics" and oriented on the core units of the newly-transformed study program "Cybernetics and information-control systems" at the second (master) study degree. The project research team considers the existence of high-quality textbooks as an important basis for mastering the subjects at the second degree of studies. The textbooks will be accompanied by a set of solved and unsolved problems intended to be processed into functions, program modules and/or application libraries using an appropriately chosen programming environment (Matlab/Simulink, CPN Tools, Microsoft Visual Studio 2008 SQL Developer, Rockwell Automation software). The said problems can be addressed while solving individual tasks, assignments and semester projects, not least in the research, which takes place at the workplace of the project research team.

• **Development of the Centre of information and communication technologies for knowledge-based systems**, project No. 26220120030 supported by the Research & Development Operational Programme funded by the ERDF, duration: 2009 - 2013. Most of the department members have been involved in this project.

• **Center for Nondestructive Diagnostics of Technological Processes Using Standard Software for Control and Communication**, project No. 26220220182 supported by Research and Development Operational Programme funded by the ERDF, duration: 2013-2015, members: Ján Jadlovský (deputy principal investigator of Activity 3.1), Anna Jadlovská, Ján Sarnovský, Iveta Zolotová, Matej Čopík, Štefan Jajičišin, Slávka Jadlovská, Peter Papcun, Jakub Čerkala, Radoslav Bielek, Michal Kopčík. Project is focused on nondestructive, contactless diagnostics of technological processes. It relies on image recognition systems where images are
scanned by grayscale, color or thermovision cameras or by other means of contact-free scanning, such as systems based on eddy currents, ultrasonic devices, laser devices etc. This equipment is integrated into the control systems of technological processes and is interconnected with the mechatronic parts of production lines which include servo systems, manipulator, robots and a variety of actuators such as pneumatic and hydraulic drives. Such systems are supported by a wide range of hardware computing means (microcontrollers, programmable logical controllers, servers) with network connection and software support on all levels. The whole system has been built based on the five-level pyramid scheme (http://kyb.fei.tuke.sk/infdsr.php).

- **IT4KT project (Information Technology for Knowledge Transfer)**, project No. 26220220123 supported by the Research & Development Operational Program funded by the ERDF, duration: 2010 - 2013, members from our department: Ján Paralič, Peter Butka, Martin Sarnovský, Jozef Wagner, Gabriel Tutoky, František Babič, Peter Koncz. Activity: this project is being solved at our Faculty of Electrical Engineering and Informatics as cooperation of researchers and educators from three different departments. We analyzed current learning processes and best practices on a set of 15 different courses from mathematics and computer science. Based on the analysis, crucial processes have been identified, modeled and will be supported by various electronic services – existing ones, which have been enhanced and combined with new types of services. All these activities are based on a common background of semantic technologies, where the shared semantics is modeled by means of an ontology.

- **Support Patients through e-Services Solutions**, project no. 3CE286P2 supported by Central Europe Programme funded by ERDF, duration: 2011 – 2014, members from our department: František Babič (project leader), Jozef Wagner, Gabriel Tutoky. Activity: this projects implements tele-health, ambient assisted living and entertainment platform in 4 cities: Ferrara, Vienna, Brno and Košice, focusing on the following target groups: people with serious respiratory problems, people with dementia, handicapped people and social exclusion. The main aim of the Košice pilot is to provide means which can improve social inclusion of older people through suitable ICT solutions designed and developed within this project.

- The Technical University of Košice was accepted as associate member of the **ALICE project** at the European Organization for Nuclear Research (CERN) on October 12th, 2012. On this occasion, the fortnightly newsletter ALICE MATTERS (http://alicematters.web.cern.ch/?q=TUKE_associate) published an article about our University. Members of the Research Center of Modern Control Techniques and Industrial Informatics at the Dpt. of Cybernetics and Artificial Intelligence, TUKE (Ján Jadlovský, Anna Jadlovská, Ján Sarnovský, Štefan Jajčišin, Matej Čopík, Slávka Jadlovská, Peter Papcun, Jakub Čerkala, Radoslav Bielek, Michal Kopčík) participate in implementing tasks related to the project, (http://kyb.fei.tuke.sk/laboratoria/cern/cern.php). They started to work on the modernization of the Detector Control System (DCS), focusing on the optimization of the data exchange interface between online and offline databases AMANDA SERVER 3.
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
- Faculty of informatics and information technologies, Slovak University of Technology in 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
- 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
- The City of Košice
- Tatrabanka, a.s.
- IT Valley Kosice
- US Steel Košice

6.2 International Co-operation

- The Open University, Knowledge Media Institute, United Kingdom
- 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
- Harvard Medical School – Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Boston, USA
- 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
• Dept. of Computer Science and Engineering, Faculty of Applied Sciences, University of West Bohemia, Plzeň
• 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

6.3 Membership in International Organizations and Societies

• Jakša, R.: IEEE, Computational Intelligence Society
• Krokavec, D.: Member of the International Federation of Automatic Control IFAC Technical Committee TC 1.4 Stochastic Systems
• Liguš, J.: EAEIE – 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.: 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 micro’CAD 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
• Páralíč, 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
• Zolotová, I.: EAEEIE – European Association for Education in Electrical and Information Engineering

6.4 Membership in Slovak Organizations and Societies
• The whole Department of Cybernetics and Artificial Intelligence is a team member of:
  o Slovak Society for Cybernetics and Informatics
  o 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
• Páralíč, 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
• SALEIE, Strategic Alignment of Electrical and Information Engineering in European Higher Education Institutions, Reference number: 527877-LLP-1-
2012-1-UK-ERASMUS-ENW. Contact persons: Ján Liguš, Iveta Zolotová, Jana Ligušová.

- Socrates - Erasmus agreement between TU of Košice and Czech University of Life Sciences, Prague, Czech Republic. Contact person: Eva Ocelíková
- Socrates - Erasmus agreement between TU of Košice and Université Henri Poincaré, Nancy 1, France, Contact person: Ján Sarnovský
- Socrates - Erasmus agreement between TU of Košice and University Hradec Kralove, Czech Republic. Contact person: Ján Vaščák
- Socrates - Erasmus agreement between TU of Košice and Universite de Technologie Compiegne, France, Contact person: Ján Liguš
- Socrates - Erasmus agreement between TU of Košice and Institut Universitaire de Technologie 1 de Grenoble 1, France, Contact person: Jana Ligušová
- OI-Net, European Academic Network for Open Innovation, Reference number: 542203-LLP-1-2013-1-FI-ERASMUS-ENW- Iveta Zolotová

7 THESES

<table>
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<tr>
<th>Thesis type</th>
<th>Bachelor</th>
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<td>134</td>
<td>6</td>
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8 OTHER ACTIVITIES

- SAMI 2013 (IEEE 11th International Symposium on Applied Machine Intelligence and Informatics) has been held January 31 - February 2, 2013 in Herľany, Slovakia
- SYMPOSIUM ON EMERGENT TRENDS IN ARTIFICIAL INTELLIGENCE & ROBOTICS has been organized in Košice, September 15-17, 2013 with special workshop on Japanese robotics and Buddy Paddy competition.
- WIKT 2013 - 8th Workshop on Intelligent and Knowledge oriented Technologies 2013 co-organized by our department has been held November 21. - 22. in Herľany.
- Znalosti (Knowledge) 2013, a member of our department was co-chairing the program committee of this Czech-Slovak scientific conference, organized in Ostrava, Czech republic, October 13-15, 2013
- Following the decision of the NOVOFER association trustees, foreign degree of Dennis Gabor Nobel Prize winner was awarded to Dr.h.c. prof. Ing. Ladislav Madarász, PhD., on 19th December 2013, during the 25th annual International Dennis Gabor Award ceremony in the Hungarian Parliament in the presence of Speaker of the National Assembly of Hungary Dr. László Kövér, government representatives, scientific institutions, industry and academia, for his achievements in research into methods of management of complex, hierarchical systems, their modelling, diagnosis and design, namely the development of the theory of situational management, design and development of a global strategy or control algorithm, application-specific methodology of situation management in various industries and other areas. Dr.h.c. prof. Ing. Ladislav Madarász, PhD is the first citizen of the Slovak Republic and the former Czechoslovakia to receive this award.
• Prof. Dr. Peter Sinčáš was awarded with the title Honorary Professor of Óbuda University for his outstanding and long-term contribution to the scientific activities of Óbuda University on May 31, 2013.

• Mária Virčíková, MSc. was selected the top student personality of the year 2012/2013 and was awarded the Prize of the President of Slovak Republic in the category Informatics, mathematics and physics for her work in the field of artificial intelligence: Human-robot interaction in social robotics.

9 PUBLICATIONS

9.1. Books


9.2. Book chapters


9.1 Journals


[4] ŠUSTER, Peter - JADLOVSKÁ, Anna: Application Results Identification Based on Genetic Algorithm in Nonlinear Control Design of Magnetic Levitation


Journal. Č. 8 (2013), s. 9-9. - ISSN 1335-2237


85. - ISSN 1336-1376


9.2 Other publications

<table>
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<tr>
<th>Publication Type</th>
<th>Conferences</th>
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<tr>
<td>Number</td>
<td>40</td>
<td>93</td>
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</table>
1 DEPARTMENT’S PROFILE

Department of Mathematics and Theoretical Informatics, before 1981 Department of Mathematical Informatics, was founded in 1969. The activities of the 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 and Theoretical Informatics 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.
            prof. RNDr. Ján Plavka, CSc.

Associate Professors: doc. RNDr. Marián Klešč, PhD.
                     doc. RNDr. Blanka Baculíková, PhD.
                     doc. RNDr. Helena Myšková, PhD.
                     doc. RNDr. Viktor Pirč, CSc.

Assistant Professors: RNDr. Štefan Berežný, PhD.
                     RNDr. Ján Buša, CSc.
                     Mgr. Ján Buša Jr., PhD.
                     RNDr. Ivan Daňo, PhD.
                     RNDr. Emília Draženská, PhD.
                     RNDr. Anna Grinčová, PhD.
                     RNDr. Daniela Kravecová, PhD.
                     PhDr. Eva Ostertagová, PhD.
                     Mgr. Ján Pribiš, PhD.
                     RNDr. Štefan Schrötter, CSc.
                     RNDr. Michal Staš, PhD.

Technical Staff: Mária Schrötterová

The Department consists of two parts:
• Mathematics Section
• Section of Theoretical Informatics

3 LABORATORIES
• Laboratory of Mathematical and Computing Modelling

4 TEACHING

4.1 Undergraduate Study (Bc.)

<table>
<thead>
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<th>Lectures/exercises (hours per week)</th>
<th>Name of lecturer</th>
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<td>Baculíková, Kravecová, Daňo</td>
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<td>Mathematics I (English)</td>
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<td>Berežný</td>
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<td>Continuous Optimization Methods</td>
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<td>3/3</td>
<td>Buša</td>
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<td>Numerical Methods</td>
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<td>Mathematical Logic</td>
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<td>3/2</td>
<td>Draženská, Myšková</td>
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<tr>
<td>Mathematics II</td>
<td>2nd</td>
<td>3/3</td>
<td>Pribiš, Klešč, Daňo</td>
</tr>
<tr>
<td>Mathematics II (English)</td>
<td>2nd</td>
<td>2/2</td>
<td>Grinčová</td>
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<td>Numerical Methods, Probability</td>
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<td>3/2</td>
<td>Buša Jr., Klešč,</td>
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# Graduate Study (Ing.)

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<th>Subject</th>
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<th>Lectures/exercises (hours per week)</th>
<th>Name of lecturer</th>
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<td>Differential Equations and Variational Calculus</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Đurina</td>
</tr>
<tr>
<td>Applied Mathematics</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/2</td>
<td>Klešč</td>
</tr>
<tr>
<td>Theory of Coding</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Plavka</td>
</tr>
<tr>
<td>Optimization Methods</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Buša</td>
</tr>
<tr>
<td>Physical Processes Modelling</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Buša</td>
</tr>
<tr>
<td>Mathematical Methods for Neural Networks and Time Series</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Daňo</td>
</tr>
<tr>
<td>Applied Mathematics</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Đurina</td>
</tr>
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<td>Ostertagová</td>
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<tr>
<td>Applied Statistics (English)</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Berežný</td>
</tr>
<tr>
<td>Discrete Dynamic Systems</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Molnárová</td>
</tr>
<tr>
<td>Discrete Dynamic Systems (English)</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Molnárová</td>
</tr>
<tr>
<td>Linux II</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Buša Jr.</td>
</tr>
<tr>
<td>Linear and Quadratic Programing</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Staš</td>
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<tr>
<td>Graph Algorithms and Discrete optimization</td>
<td>9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Klešč</td>
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<tr>
<td>Mathematical Methods for Neural Networks and Time Series (English)</td>
<td>9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Daňo</td>
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<td>Queueing Theory</td>
<td>9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Berežný</td>
</tr>
<tr>
<td>Finite Element Method</td>
<td>10&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Buša Jr.</td>
</tr>
</tbody>
</table>

## 5 RESEARCH PROJECTS

- **Crossings in non-planar graphs**, VEGA Slovak Grant Agency No. 1/0309/11, duration 2011-2013, co-ordinator: Marián Klešč.
• **Funkcionálne priestory, bornológie, hyperpriestory a topologické štruktúry.** APVV-0269-11, duration 2012-2015, co-ordinator: Michal Staš.

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
- Prof. Marie Demlová, Czech Technical University in Prague, Czech Republic
- Prof. Martin Gavalec, University of Hradec Králové, Czech Republic
- Prof. Nicolae Pop, Technical university of Cluj-Napoca, North University Center at Baia Mare, Romania
- Assoc.Prof. Yuliya Chaparova, University of Ruse, Bulgaria
- Dr. Shura Hayryan, Institute of Physics, Academia Sinica, Taipei, Taiwan
- Prof. Chin-Kun Hu, Institute of Physics, Academia Sinica, Taipei, Taiwan
- Dr. Ming-Chya, Institute of Physics, Academia Sinica, Taipei, Taiwan
- Carolina Medina, University of San Luis Potosi, Mexico

6.2 International Co-operation

- Technical University in Graz, Austria
- Charles University in Prague, Czech Republic
- Czech Technical University in Prague, Czech Republic
- University of Birmingham, United Kingdom
- UHK in Hradec Králové, Czech Republic
- Texas University, Kingsville, USA
- Veszprem University, Hungary
- Technical university of Cluj-Napoca, North University at Baia Mare, Romania
- JINR Dubna, Russia
- University of Miskolc, Hungary
- Institute of Physics, Academia Sinica, Taiwan

6.2.1. Visits of Staff Members to Foreign Institutions

Summer School: Computational Methods in Mathematical Modelling, Period 16-31, August 2013, Technical university of Cluj-Napoca, North University at Baia Mare, Romania:

- Berežný, Š.
6.3 Membership in International Organizations and Societies

- Buša, J.: Czechoslovak TeX Users Group (CSTUG)
- Buša Jr., J.: Czechoslovak TeX Users Group (CSTUG)
- Klešč, M.: American Mathematical Society
- Plávka, J.: International Linear Algebra Society

6.4 Membership in Slovak Organizations and Societies

- Baculíková, B.: Slovak Mathematical Society
- Berežný, Š.: Slovak Mathematical Society
- Buša, J.: Slovak Mathematical Society
- Buša, J: Committee for the Cooperation of the Slovak Republic with JINR, Dubna
- Buša Jr., J.: Slovak Mathematical Society
- Daňo, I.: Slovak Mathematical Society
- Draženská, E.: Slovak Mathematical Society
- Džurina, J.: Slovak Mathematical Society
- Grinčová, 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 III program CIII-HU-0028-06-1213 - Active Methods in Teaching and Learning Mathematics and Informatics

7 THESIS

<table>
<thead>
<tr>
<th>Thesis type</th>
<th>Bachelor</th>
<th>Master</th>
<th>Doctoral</th>
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<td>Number</td>
<td>6</td>
<td>7</td>
<td>0</td>
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</table>

8 OTHER ACTIVITIES

8.1 Workshops:

- Buša, J. – Schrötter, Š.: 14-th Conference of Košice Mathematicians, April 2013, Herfany, Co-organisers

8.2 Study tours:
- Berežný, Š.: Czech Technical University in Prague, Czech Republic
- Berežný, Š.: North University Center at Baia Mare, Romania
- Buša, J.: JINR Dubna, Russia
- Ostertagová, E.: Czech Technical University in Prague, Czech Republic
- Pribiš, J.: JINR Dubna, Russia

9 PUBLICATIONS

9.1 Books


9.2 Journals


### 9.3 Other publications

<table>
<thead>
<tr>
<th>Publication Type</th>
<th>Conferences</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreign</td>
<td>Home</td>
</tr>
</tbody>
</table>

- **Publication Type**: Various types of publications are listed, including conference papers, other publications, and foreign and home publications.
- **Conferences**: The number of conference publications is shown in the table.
- **Other**: The number of other publications is also shown in the table.

The focus is on the academic contributions of faculty members and students in the Faculty of Electrical Engineering and Informatics at the Technical University of Košice. The publications span various fields including mathematics, computer science, and engineering, reflecting the interdisciplinary nature of research and education at the institution.
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 approx. 690 students in bachelor and 290 students in master programs. Number of doctoral students studying towards PhD degree is more than 60.

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. RNDr. Valerie Novitzká, PhD.
- prof. Liberios Vokorokos, PhD.

Associate Professors:
- doc. Ing. Ján Genči, PhD.
- doc. Ing. František Jakab, PhD.
- doc. Ing. Jaroslav Porubáň, PhD.
- doc. Ing. Ladislav Samuelík, CSc.
- doc. Ing. Branislav Sobota, PhD.
- doc. Ing. Milan Šujanský, CSc.
- doc. Ing. Martin Tomášek, PhD.
Assistant Professors:
Ing. Norbert Ádám, PhD.
Ing. Anton Baláž, PhD.
Ing. Miroslav Biňas, PhD.
Ing. Peter Fecífač, PhD.
Ing. Katarína Fecifaková, PhD.
Ing. František Hrozék, PhD.
Ing. Sergej Chodarev, PhD.
Ing. Eva Chovancová, PhD.
Ing. Štefan Korečko, PhD.
Ing. Branislav Madoš, PhD.
Ing. Daniel Mihályi, PhD.
Ing. Miroslav Michalko, PhD.
Ing. Marek Paralič, PhD.
Ing. William Steingartner, PhD.
Ing. Csaba Szabó, PhD.
Ing. Slavomír Šimoňák, PhD.
Ing. Henrieta Telepovská, PhD.
Ing. Peter Václavík, PhD.

Senior Scientists:
Ing. Norbert Ádám, PhD.
Ing. Branislav Madoš, PhD.

Technical Staff:
Ivana Macková
Ing. Mária Halászová
Jozef Šefčík
Helena Švarcová

Ph.D. Students:
Internal form:
Ing. Michal Augustín
Ing. Michaela Bačíková
Ing. Martina Benčková
Ing. Marek Blanár
Ing. Dávid Cymbaláč
Ing. Marek Čajkovský
Ing. Marek Čopjak
Ing. Emília Demeterová
Ing. Marek Domiter
Ing. Zuzana Dudláková
Ing. Michal Ennert
Ing. Peter Fanfara
Mgr. Martin Grekšo
Ing. Ivan Halupka
Ing. Miroslav Hartinger
Ing. Ján Hurtuk
Ing. Peter Ivančák
Ing. Ondrej Kainz
Ing. Martin Kapa
Ing. Ivan Klimek
Ing. Michal Kovalčík
Ing. Dominik Lakatoš
Ing. Jakub Livovský
Ing. Martina Laňová
Ing. Jaroslav Lámer
Ing. Pavol Macko
Ing. Milan Nosáľ
Ing. Marek Novák
Ing. Adrián Pekár
Ing. Emília Pietriková
Ing. Veronika Szabóová
Ing. Lukáš Štefanský
Ing. Martin Varga
Ing. Milan Vrábeľ
Ing. Wasim Zahra
Ing. Jana Petrillová

External form:
Ing. Jozef Doboš
Ing. Martin Droppa
Ing. Luboš Důbravec
Ing. Marek Dufala
Ing. Dušan Janovský
Ing. Marián Jenčík
Ing. Milan Krendželák
Ing. Lukáš Mikula
Ing. Marcel Mojžiš
Ing. Matej Lakatoš
Ing. Ivan Peťko
Ing. Igor Petz
Ing. Róbert Peťka
Ing. Ján Polák
Ing. Peter Pražňák
Ing. Ján Radušovský
Ing. Štefan Sinčák
Ing. Maroš Ščišák
Ing. Kristián Šesták
Ing. Matúš Valo
Ing. Juraj Vízi

Department of Technologies in Electronics
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3 **LABORATORIES**

- Laboratory of Intelligent Interfaces for Information and Communication Systems (LIRKIS)
- Computer Networks Laboratory (www.cnl.sk)
- Computer Architectures and Security Laboratory
- Operating Systems Laboratory
- Software Engineering Laboratory
- Information Systems Laboratory
- Informatics and Computer Languages Laboratory
- Administration and Operational Support

4 **TEACHING**

4.1 Undergraduate Study (Bc.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures / exercises (hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Programming and Networks</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>3/2</td>
<td>Sobota, Paralič, Korečko</td>
</tr>
<tr>
<td>Principles of Computer Engineering</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vokorokos, Madoš</td>
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<tr>
<td>Programming</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Paralič, Tomášek, Szabó</td>
</tr>
<tr>
<td>Object-Oriented Programming</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Tomášek</td>
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<tr>
<td>Formal Languages and Compilers</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Kollár</td>
</tr>
<tr>
<td>Theoretical Foundations of Informatics</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Hudák, Tomášek</td>
</tr>
<tr>
<td>Data Structures and Algorithms</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Ľuňák</td>
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<tr>
<td>OS Linux Administration I.</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>0/2</td>
<td>Biňas</td>
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<td>Database Systems</td>
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<td>2/2</td>
<td>Telepovská</td>
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<tr>
<td>Operating Systems</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Genči</td>
</tr>
<tr>
<td>Assembler</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Šimoňák</td>
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<tr>
<td>Computer Networks</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Jakab</td>
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<tr>
<td>Programming in .NET Environment</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Václavík</td>
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<tr>
<td>Java Technologies</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Šujanský</td>
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<td>Security in Computer Systems</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vokorokos, Baláž</td>
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<tr>
<td>Documentation in Informatics</td>
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<td>0/3</td>
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<td>Bachelor Project</td>
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<td>0/6</td>
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<td>Logical Systems</td>
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<td>3/3</td>
<td>Bača</td>
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<tr>
<td>Computer Graphics</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/2</td>
<td>Šujanský</td>
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<td>Fundamentals of Software Engineering</td>
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<td>Distributed Programming</td>
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<td>2/2</td>
<td>Paralič</td>
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<td>Application of the Network Technologies</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
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<td>Michalko</td>
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<td>Functional Programming</td>
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<td>2/2</td>
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<td>Computer system architectures</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
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<td>Vokorokos, Adám</td>
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<td>2/2</td>
<td>Václavík</td>
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<td>Internet Security</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vokorokos, Baláž</td>
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<td>Technologies of IS Development I.</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
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4.2 Graduate study (Ing.)

<table>
<thead>
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<th>Lectures / exercises (hours per week)</th>
<th>Name of Lecturer</th>
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<tr>
<td>Compilers Design</td>
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<td>Havlíček</td>
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<td>Composition of Computers</td>
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<td>2/2</td>
<td>Vokorokos, Chovancová</td>
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<td>Theoretical Informatics</td>
<td>1st</td>
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<td>Hudák</td>
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<td>Type Theory</td>
<td>1st</td>
<td>2/2</td>
<td>Novitzká</td>
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<tr>
<td>Database Administration</td>
<td>1st</td>
<td>2/2</td>
<td>Telepovská</td>
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<tr>
<td>Modeling and Simulation</td>
<td>1st</td>
<td>2/2</td>
<td>Šujanský</td>
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<td>Design of Digital Systems</td>
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<td>1/3</td>
<td>Bača</td>
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<td>Advanced Database Technologies</td>
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<td>Web Technologies</td>
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<td>2/2</td>
<td>Porubán</td>
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<td>0/3</td>
<td>Telepovská</td>
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<tr>
<td>OpenView and HP UNIX Administration</td>
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<td>2/2</td>
<td>Baláž</td>
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<td>Diagnostics and Reliability</td>
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<td>2/2</td>
<td>Bača</td>
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<td>Formal Specifications of Systems</td>
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<td>3/2</td>
<td>Hudák</td>
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<td>Logics for Informaticians</td>
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<td>2/2</td>
<td>Novitzká</td>
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<td>2/2</td>
<td>Sobota</td>
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<td>2/2</td>
<td>Havlíček</td>
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<td>Vokorokos, Baláž</td>
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<td>Diploma Project</td>
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<td>0/8</td>
<td>Kollár</td>
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<td>Parallel Programming</td>
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<td>Software Quality and Management</td>
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<td>Samuelis</td>
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<td>Parallel Computer Systems</td>
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<td>3/2</td>
<td>Vokorokos, Ádám</td>
</tr>
<tr>
<td>Designing of Computer Networks</td>
<td>3rd</td>
<td>2/2</td>
<td>Feciľák</td>
</tr>
<tr>
<td>Technologies of Software Projects-II</td>
<td>3rd</td>
<td>0/2</td>
<td>Szabó</td>
</tr>
<tr>
<td>Diploma Thesis</td>
<td>4th</td>
<td>0/18</td>
<td>Kollár</td>
</tr>
</tbody>
</table>

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:

- Development of Centre of Information and Communication Technologies for Knowledge Systems. Research and Development Operational Programme funded by the ERDF No. 26220120030, duration:
2010-2013


- **Integration of Software Engineering Processes Quality in the Curriculum of Computer Science Programs at Technical Universities**,
Cultural and Educational Grant Agency KEQA 050TUKE-4/2013, duration: 2013-2014, coordinator: Ing. Csaba Szabó, PhD.


- **Cisco Networking Academy Program – Regional Academy at DCI FEI TU, Cisco No. 8250**, duration: since 1999, coordinator: doc. Ing. František Jakab, PhD.

- **Cisco Networking Academy Program – Academy Support Center/Instructor training center/Cisco Academy DCI FEI TU, Cisco No. 8250**, duration: since 1999, coordinator: doc. Ing. František Jakab, PhD. and Ing. Peter Feciľák, 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. Ing. Valentino Vranič, PhD., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- doc. Mgr. Daniela Chudá, PhD., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- doc. Ing. Viera Rozinajová, PhD., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- Ing. Katarína Jelemenská, PhD., Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia
- prof. Ing. Mária Bielíková, 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
• doc. Ing. Ladislav Hluchý, CSc., Slovak Academy of Sciences, Institute of Informatics, 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
• 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
• doc. Ing. Jiří Kunovský, CSc., Brno University of Technology, Czech Republic
• doc. RNDr. Gabriela Andrejková, CSc., Pavol Jozef Šafarik University in Košice, Slovakia
• doc. RNDr. Petr Šaloun, PhD., VŠB-Technical University of Ostrava, Czech Republic
• doc. Ing. Jarmla Škrinárová, PhD., Matej Bel University in Banská Bystrica, Slovakia
• Ing. Dana Horváthová, PhD., Matej Bel University in Banská Bystrica, Slovakia
• Mgr. PaedDr. Vladimír Siládi, PhD., Matej Bel University in Banská Bystrica, Slovakia
• Akademik prof. Ing. Ivan Plander, DrSc., Alexander Dubček University of Trenčín, Slovakia
• doc. Ing. Penka Martinová, PhD., Faculty of Management Science and Informatics, University of Žilina, Slovakia
• RNDr. Štefan Kovalík, PhD., Faculty of Management Science and Informatics, University of Žilina, Slovakia
• prof. Ing. Mikuláš Alexík, PhD., Faculty of Management Science and Informatics, University of Žilina, Slovakia
• Assoc. Prof. Andreas Bollin, Alps Adriatic University of Klagenfurt, Austria
• Gordana Rakić, University of Novi Sad, Serbia
• Boban Vesin, University of Novi Sad, Serbia
• Ivan Pribela, University of Novi Sad, Serbia
• Assoc. Prof. PhD. Simona Motogna, Babes Bolyai, University of Cluj-Napoca, Romania
• Davorka Radaković, University of Novi Sad, Serbia
• Jernej Hubert, University of Maribor, Slovenia
• Kerekes Tünde Klára, Babes Bolyai, University of Cluj-Napoca, Romania
• Michal Kocifaj, University of Žilina, Slovakia
• Ing. Lucia Lacko-Batrošová, Slovak Academy of Sciences, Slovakia
• RNDr. Mária Šimaľiová, Pavol Jozef Safarik University, Košice, Slovakia
• RNDr. Pavol Sokol, Pavol Jozef Safarik University, Košice, Slovakia
• Ing. Tomáš Páleník, PhD., Slovak University of technology, Bratislava, Slovakia
• Mgr. Libor Olajec, Silesian University in Opava, 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
- Alpen-Adria-Universität Klagenfurt, Austria
- Carinthia University of Applied Sciences, Klagenfurt, Austria
- Università della Svizzeria Italiana, Lugano, Switzerland
- University of Alcalá, Alcalá de Henares (Madrid), Spain
- 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
- International Solomon University Kiew, Ukraine
- The National University of T. Schevchenko, Kiew, Ukraine
- Kharkov National University of Radioelectronics, Ukraine
- Uzhgorod National University, Ukraine
- ISTASE, Université 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
- NTNU, Institutt for Telematikk, Trondheim, Norway
- Bay Zoltán Nonprofit Ltd. for Applied Research, Institute for Logistics and Production Engineering (BAY-LOGI), Miskolc, Hungary
- University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia

### 6.2.1. Visits of Staff Members to Foreign Institutions

- doc. Ing. František Jakab, PhD., IT Conference, Brussels, Belgium
- doc. Ing. František Jakab, PhD., NetAcad Conference, Brno, Czech Republic
- doc. Ing. František Jakab, PhD., INES 2013, University of San Jose, Costa Rica
- doc. Ing. František Jakab, PhD., NetAcad meeting, London, United Kingdom
- doc. Ing. František Jakab, PhD., EMINENT 2013, Helsinki, Sweden
- doc. Ing. František Jakab, PhD., European eSkills conference, Brussels, Belgium
- doc. Ing. František Jakab, PhD., NetAcad International Conference, Berlin, Germany
- doc. Ing. Ján Genči, PhD., TEMPUS INARM project meeting, Maria Curie-Skłodowska University, Lublin, Poland
- doc. Ing. Ján Genči, PhD., TEMPUS INARM project meeting, Khmelnitsky National University, Ukraine
- doc. Ing. Ján Genči, PhD., TEMPUS INARM project meeting, Yerevan, Armenia
- doc. Ing. Ján Genči, PhD., DATAKON 2013, Ostrava, Czech Republic
- doc. Ing. Branislav Sobota, PhD., DATAKON 2013, Ostrava, Czech Republic
doc. Ing. Branislav Sobota, PhD., HUSK project meeting, Bay Zoltan Nonprofit Ltd., Miskolc, Hungary
• Ing. František Hrozek, PhD., HUSK project, University of Miskolc, Hungary
• Ing. Štefan Korečko, PhD., HUSK project, University of Miskolc, Hungary
• prof. Ing. Štefan Hudák, DrSc., Brno University of Technology, Czech Republic
• prof. Ing. Ján Kollár, CSc., Brno University of Technology, Czech Republic
• Ing. Martin Varga, Integrated Systems Europe, Amsterdam, Holland
• doc. Ing. Ladislav Samuelis, CSc., EIT ICT Labs Master School, Budapest, Hungary
• doc. Ing. Ladislav Samuelis, CSc., International Conference ISCE 2013, San Francisco, USA
• doc. Ing. Ladislav Samuelis, CSc., CEEPUS, University of Ljubljana, Slovenia
• doc. Ing. Jaroslav Porubán, PhD., SLATE 2013, University of Porto, Portugal
• prof. Ing. Ján Kollár, CSc., SLATE 2013, University of Porto, Portugal
• Ing. Sergej Chodarev, PhD., SLATE 2013, University of Porto, Portugal
• Ing. Emília Pietriková, SLATE 2013, University of Porto, Portugal
• Ing. Milan Nosáľ, SLATE 2013, University of Porto, Portugal
• Ing. Ivan Halupka, SLATE 2013, University of Porto, Portugal
• Ing. Michaela Bačíková, SLATE 2013, University of Porto, Portugal
• Ing. Dominik Lakatoš, SLATE 2013, University of Porto, Portugal
• doc. Ing. Jaroslav Porubán, DSL Summer School, Babes Bolyai, University of Cluj-Napoca, Romania
• Ing. Sergej Chodarev, PhD., DSL Summer School, Babes Bolyai, University of Cluj-Napoca, Romania
• doc. Ing. Jaroslav Porubán, PhD., FedCIS 2013, University of Krakow, Poland
• Ing. Dominik Lakatoš, FedCIS 2013, University of Krakow, Poland
• Ing. Ivan Halupka, FedCIS 2013, University of Krakow, Poland
• doc. Ing. Jaroslav Porubán, PhD., APVV project meeting, University of Novi Sad, Serbia
• Ing. Milan Nosáľ, APVV project meeting, University of Novi Sad, Serbia
• Ing. Dominik Lakatoš, APVV project meeting, University of Novi Sad, Serbia
• Ing. Štefan Korečko, PhD., CINTI 2013, Budapest, Hungary
• Ing. Veronika Szabóová, APVV project meeting Alps Adriatic University of Klagenfurt, Austria
• Ing. Csaba Szabó, PhD., APVV project meeting, Alps Adriatic University of Klagenfurt, Austria
• Ing. William Szeingartner, PhD., CECIIS 2013, Varazdin, Croatia
• Ing. William Steingartner, PhD., University of Szeged, Hungary
• Ing. Peter Feciľák, PhD., NetAcad International Conference, Berlin, Germany
• Ing. Katarína Feciľaková, PhD., NetAcad International Conference, Berlin, Germany
• Ing. Katarína Feciľaková, PhD., NetAcad Conference, Brno, Czech Republic
• Ing. Peter Feciľák, PhD., NetAcad Conference, Brno, Czech Republic
• Ing. Peter Feciľák, PhD., NetAcad meeting, London, United Kingdom
• Ing. Katarína Fecišáková, PhD., NetAcad meeting, London, United Kingdom
• Ing. Dávid Cymbalák, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Martin Varga, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Zuzana Dudláková, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Milan Nosáľ, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Michaela Bačíková, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Dominik Lakatoš, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Ivan Halupka, International Conference “Poster 2013”, Prague, Czech Republic
• Ing. Emília Pietriková, International Conference “Poster 2013”, Prague, Czech Republic
• Ign. Michaela Bačíková, HIS 2013, Gdansk University of Technology, Poland

6.3 Membership in International Organizations and Societies
• 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
• Jakab, F.: Member of the Institute of Electrical and Electronics Engineers
• 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
• Paralič, M.: Member of the Institute of Electrical and Electronics Engineers
• Samuelis, L.: Member of the EuroPACE board (virtual university, Leuven, Belgium)
• Samuelis, L.: Member of the J.von Neumann Hungarian informatics society

6.4 Membership in Slovak Organizations and Societies
• Ádám, N.: External member of the Hungarian Academy of Sciences (MTA).
• Havlice, Z.: Scientific board of the Faculty of Management Science and Informatics, Technical University of Žilina
• 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
• 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 on 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 of directors
• Jakab F.: Member of working group ICT – Research and development, Ministry of Education
• 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“
• Novitzká, V.: Member of the Board of the SSAKI - „Slovak Society for Applied Cybernetics and Informatics“
• 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.: Contact for Oracle Academy
• 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
• 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
• Cooperation with the Cisco company (www.cnl.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 IBM company
• IT Valley Košice

7 THESES

<table>
<thead>
<tr>
<th>Thesis type</th>
<th>Bachelor</th>
<th>Master</th>
<th>Doctoral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>211</td>
<td>164</td>
<td>6</td>
</tr>
</tbody>
</table>

8 OTHER ACTIVITIES

8.1 Symposia, Workshops, Conferences, Seminars
• SAMI 2013 – 11th International Symposium on Applied Machine Intelligence and Informatics, January 31 - February 2, 2013 in Herľany, Slovakia

8.2 Study tours
• Ing. Adrián Pekár, JKU Linz, Austria (ERASMUS)
• Ing. Veronika Szabóová, Aplen-Adria Universität Klagenfurt, Austria (APVV)
• Ing. Ivan Halupka, Babes Bolyai University, Cluj Napoca, Romania (ERASMUS)
• Ing. Michaela Bačíková, Babes Bolyai University, Cluj Napoca, Romania (ERASMUS)
• Ing. Milan Nosáľ, Babes Bolyai University, Cluj Napoca, Romania (ERASMUS)
• Ing. Peter Ivančák, University of Maribor, Slovenia (CEEPUS)
• Ing. Milan Nosáľ, University of Novi Sad, Serbia (APVV)
• Ing. Dominik Lakatoš, University of Novi Sad, Serbia, (APVV)
• Ing. Veronika Szabóová, JKU Linz, Austria (CEEPUS)
9 PUBLICATIONS

9.1 Books


9.2 Journals


9.3 Other publications

<table>
<thead>
<tr>
<th>Publication Type</th>
<th>Conferences</th>
<th>Other</th>
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<tr>
<td></td>
<td>Foreign</td>
<td>Home</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>53</td>
</tr>
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</table>
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** “Automotive electronics” lasts in normal way 3 years and is leading to degree Bc. The graduates get more-or-less practical skills in mastering automotive electronics.

**Master's Degree course** “Progressive materials and technologies in automotive electronics” lasts in normal way 2 years and is leading to degree Ing. The graduates get theoretical and practical skills in the area of automotive electronic with the aspect on progressive materials and technologies. Study programme “Production Technologies in Electronics” at the Department was finished and closed in the year 2011.

**PhD. course** “Progressive materials and technologies in automotive electronics” lasts in normal way 3 years and is leading to degree PhD. The graduates get erudition in scientific areas and acquire deeper knowledge in specific area of materials and technologies in automotive electronics.
The subjects in the degree courses are orientated to technologies in electronics with accent on automotive electronics: mounting technology in electronics, printed circuit boards, thick film technology, LTCC technology and polymer technology.

The basic research activities of Department are concentrated on:

- research, development and application of latest trends in the field of mounting technology in electronic,
- investigation of materials and structures of solder joints,
- research and development of Microsystems and hybrid sensors,
- LTCC multilayer modules,
- quality and reliability of electronic systems.

2 STAFF

Professors: prof. Ing. Alena Pietriková, CSc.
prof. Ing. Stanislav Slosarčík, CSc.
Dr.h.c. prof. Ing. Miloš Somora, CSc.

Assistant Professors: Ing. Slavomír Kardoš, PhD.
Ing. Ľubomír Livovský, PhD.
Ing. Juraj Šurišin, PhD.
Ing. Igor Vehec, PhD.
Ing. Pavol Cabúk, PhD.
Ing. Michal Jurčišin, PhD.

Research staff: Igor Vehec

Secretary: Mgr. Alena Focková

Internal Ph.D. Student: Ing. Michal Jurčišin, PhD. – defended PhD thesis in summer 2013

Ing. Dominik Demeter
Ing. Kornel Ruman
Ing. Tibor Rovenský
Ing. Peter Lukács

3 LABORATORIES

- Laboratory of Technological Processes I.
- Laboratory of Technological Processes II.
- Virtual Technological Laboratory and CAD design systems.
- Laboratory of Diagnostics and Thermal Processing.
- Laboratory of Optical Diagnostics and Control of Electronic Structures.
- Laboratory of Measurements in Electronics.
## 4 TEACHING

### 4.1 Undergraduate Study (Bc.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Materials Engineering</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/2</td>
<td>Pietriková, Banský, Kardoš, Ďurišin, Vehec, Cabúk</td>
</tr>
<tr>
<td>Production Processes in Electronics</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/3</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Production and Properties of Passive Components</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Kardoš</td>
</tr>
<tr>
<td>Measurement of Electronics Structures</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Cabúk</td>
</tr>
<tr>
<td>Bachelor Thesis I.</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0/3</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Fundamentals of Microelectronic Technologies</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vehec</td>
</tr>
<tr>
<td>Microstructural Analyses of Materials in Electronics</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3/3</td>
<td>Ďurišin</td>
</tr>
<tr>
<td>Automated Measuring Systems</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/0</td>
<td>Livovský</td>
</tr>
<tr>
<td>Bachelor Thesis II.</td>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0/9</td>
<td>Pietriková</td>
</tr>
</tbody>
</table>

### 4.2 Graduate Study (Ing.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Processes in Electronics I</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>4/4</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Design Systems in Electronic</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/3</td>
<td>Livovský</td>
</tr>
<tr>
<td>Semestral Project</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0/3</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Physical Principles and Design of Microsystems</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Somora</td>
</tr>
<tr>
<td>Production Processes in Electronics II</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/4</td>
<td>Slosarčík</td>
</tr>
<tr>
<td>Quality and Reliability Management</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Diploma Thesis I.</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>0/5</td>
<td>Pietriková</td>
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<tr>
<td>Production Technologies, Structure, Properties and Applications of Sensors</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/3</td>
<td>Banský</td>
</tr>
<tr>
<td>Design Systems in Electronic</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/3</td>
<td>Livovský</td>
</tr>
<tr>
<td>Materials for Electrotechnical Applications</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/1</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Microprocessors in Automotive Electronics</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Livovský</td>
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<td>Diploma Thesis II.</td>
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<td>0/18</td>
<td>Slosarčík</td>
</tr>
<tr>
<td>Chosen Chapters from Progressive Materials and Technologies in Car Electronics</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Pietriková</td>
</tr>
</tbody>
</table>
4.3 Undergraduate and Graduate Study for Foreign Students (in English Language)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
</tr>
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<tbody>
<tr>
<td>Fundamentals of Material Engineering</td>
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<td>2/2</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Production Processes in Electronics</td>
<td>3\textsuperscript{rd}</td>
<td>3/2</td>
<td>Pietriková</td>
</tr>
</tbody>
</table>

4.4 Postgraduate Study (PhD.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
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<tr>
<td>Electrotechnologies and Materials</td>
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<td>0/2</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Scientific research I.</td>
<td>1\textsuperscript{st}</td>
<td>0/2</td>
<td>Pietriková</td>
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<tr>
<td>Analyse Methods of Electronic Materials and Structures</td>
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<td>0/2</td>
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<td>0/2</td>
<td>Supervisors</td>
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4.5 PhD. Students at the Branch of Electrotechnology and Materials

<table>
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<th>Thesis</th>
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<th>Supervisor</th>
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<tbody>
<tr>
<td>Lukács, P.</td>
<td>Active Circuit Component of UWB Radar Based on LTCC</td>
<td>1 / internal</td>
<td>Pietriková</td>
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<tr>
<td>Rovenský, T.</td>
<td>Analyses of High frequency element’s properties from the various materials and technologies view</td>
<td>2 / internal</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Ruman, K.</td>
<td>Contribution to Analyse of Microstrip Filtres for UWB Sensor Systems based on LTCC</td>
<td>3 / internal</td>
<td>Pietriková</td>
</tr>
<tr>
<td>Demeter, D.</td>
<td>The Virtual Technology Laboratory for the e-learning Education of the Assembling Technologies in Electronics</td>
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<td>Banský</td>
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<tr>
<td>Jurčišin, M.</td>
<td>Contribution to Measurement of Intra-Abdominal Pressure by Noninvasive Method</td>
<td>4 / internal</td>
<td>Slosarčík</td>
</tr>
</tbody>
</table>

5 RESEARCH PROJECTS

5.1 Structural Funds

- Centre of Excellence of the Integrated Research and Exploitation of the Progressive Materials and Technologies in the Area of Automotive Electronics (Centrum excelentnosti integrovaného výskumu a využitia


5.2 Research Projects


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

- Magneti Marelli Slovakia, s.r.o. 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,
6.2 International Co-operation

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

- FEL ČVUT Prague, Czech Republic,
- IMT Bucharest, Romania, bilateral co-operation SK/Ro project,
- University POLITEHNICA of Bucharest (UPB), COST,
- Budapest University of Technology and Economics (BME), COST,
- Politechnika Rzeszow, Poland.

6.2.1. Foreign Visitors to the Department

- doc. Josef Šandera, PhD., CZ     05.02. – 06.02.2013
- Ing. Martin Klíma, CZ      05.02. – 06.02.2013
- Ing. Michal Štekovič, CZ     05.02. – 06.02.2013
- Ing. Karel Dušek, PhD., CZ     27.06. – 27.06.2013

6.2.2. Visits of Staff Members to Foreign Institutions

- Rovenský, T., Germany (Ilmenau)     09.04. – 05.06.2013
- Slosarčík, S., Poland (Rzeszow)    19.04. – 19.04.2013
- Jurčišin, M., Poland (Rzeszow)     10.05. – 10.05.2013
- Pietriková, A., Romania (Alba Iulia)  08.05. – 12.05.2013
- Ruman, K., Romania (Alba Iulia)     08.05. – 12.05.2013
- Pietriková, A., CZ (Plzeň)  01.09. – 05.09.2013
- Rovenský, T., CZ (Plzeň)  01.09. – 05.09.2013
- Slosarčík, S., CZ (Brno)     08.09. – 10.09.2013
- Jurčišin, M., CZ (Brno)     08.09. – 11.09.2013
- Demeter, D., CZ (Brno)     08.09. – 11.09.2013
- Ruman, K., CZ (Plzeň)     09.09. – 13.09.2013
- Pietriková, A., Poland (Wroclaw)      18.09. – 19.09.2013
- Cabúk, P., Poland (Wroclaw)      18.09. – 19.09.2013
- Lukács, P., Poland (Wroclaw)      18.09. – 19.09.2013
- Vehec, I., Poland (Wroclaw)      18.09. – 19.09.2013
- Řurišín, J., Germany (Hamburg)    10.11. – 13.11.2013
- Slosarčík, S., Poland (Rzeszow)   25.11. – 26.11.2013
- Pietriková, A., Germany (Ilmenau, Dresden)  24.11. – 30.11.2013

6.3 Membership in International Organizations and Societies

- 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.
- Slosarčík, S.: Member of „Scientific Committee“ International Interdisciplinary PhD Workshop I2PhDW.
6.4 Membership in Slovak Organizations and Societies

- 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 Cultural and Educational Commission KEGA No.3.
- Pietriková, A.: Chair of the Commission for Ph.D. Study in the Branch “5-2-12 Electrotechnology and Materials” at FEI TU Košice.
- Pietriková, A.: Member of the Commission for Ph.D. Study in the Branch “5-2-12 Electrotechnology and Materials” at Faculty of Electrical Engineering, University of Žilina.
- Slosarčík, S.: Member of the Slovak Metrology Society.

7 THESES

<table>
<thead>
<tr>
<th>Thesis type</th>
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<th>Master</th>
<th>Doctoral</th>
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8 OTHER ACTIVITIES

8.1 Student Competitions and Rewards


9 PUBLICATIONS

9.1 Journals


9.2 Papers in Citation Database


9.3 Other publications

<table>
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<tr>
<th>Publication Type</th>
<th>Conferences</th>
<th>Other</th>
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<tr>
<td>Number</td>
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<td>5</td>
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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.

DEPARTMENT OF THEORETICAL ELECTRICAL ENGINEERING AND ELECTRICAL MEASUREMENT

http://kteem.fei.tuke.sk
Tel./Fax: +421 55 602 2801

Head of Department
prof. Ing. Dobroslav Kováč, PhD.
E-mail: Dobroslav.Kovac@tuke.sk
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
- Integrated research and exploitation the advanced materials and technologies in the automotive electronics
- Modern virtual, intelligent and automated measuring and control systems.

2 STAFF

Professor: prof. Ing. Dobroslav Kováč, PhD.
           Prof. Ing. Irena Kováčová, PhD.

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

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

Technical staff: Jozef Lenárt
                Danuša Topolčianová

PhD. Students: Ing. Ján Perduľák
               Ing. Matúš Ocilka
               Ing. Jozef Dziak
               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.)**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
<th>Name of Lecturer</th>
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<tbody>
<tr>
<td>Fundamentals of Electrical Engineering</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/2</td>
<td>Tomčíková, Dudáš, Hodulíková</td>
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<tr>
<td>Electrotechnics</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>3/2</td>
<td>Dudáš, Kováč, Špaldonová, Tomčíková</td>
</tr>
<tr>
<td>Digital Measurement</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Mojžiš</td>
</tr>
<tr>
<td>Electrotechnical Practical Lessons</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0/3</td>
<td>Mojžiš, Bučko, Hodulíková, Molnár</td>
</tr>
<tr>
<td>MS Office in Technical Practice</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Špaldonová</td>
</tr>
<tr>
<td>Programming of Industrial Applications I</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vince</td>
</tr>
<tr>
<td>Windows server</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vince</td>
</tr>
<tr>
<td>Industrial Electrical Engineering I</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3/3</td>
<td>Perduľák</td>
</tr>
<tr>
<td>CAD systems in Electrotechnics</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/3</td>
<td>Špaldonová, Tomčíková, Guzan</td>
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<tr>
<td>Informatics and Industrial Measurement</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>2/2</td>
<td>Mojžiš</td>
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<tr>
<td>Computational, Office and Multimedial Technique</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
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<td>Guzan</td>
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<td>Programming of Industrial Applications II</td>
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<td>2/2</td>
<td>Ocilka</td>
</tr>
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<td>Semester Project II</td>
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<td>0/3</td>
<td>Kováč</td>
</tr>
<tr>
<td>Metrology</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Mojžiš</td>
</tr>
<tr>
<td>Modelling and Measurement</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Molnár</td>
</tr>
<tr>
<td>Applied Electronics</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/3</td>
<td>Kováč</td>
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<td>Database Systems SQL ORACLE</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>2/2</td>
<td>Vince</td>
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<td>Bachelor’s Project</td>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0/6</td>
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4.2 **Undergraduate Study for Foreign Students (in English language)**

<table>
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<th>Subject</th>
<th>Semester</th>
<th>Lectures/exercises (hours per week)</th>
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<tr>
<td>Fundamentals of Electrical Engineering</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>2/2</td>
<td>Dudáš, Tomčíková</td>
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<tr>
<td>Electrotechnics</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
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<td>Dudáš, Tomčíková</td>
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<td>Windows server</td>
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<td>Vince</td>
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4.3. Graduate study (Ing.)

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<td>Linux II</td>
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</table>

5 RESEARCH PROJECTS


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. Gošciaňska (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
- Department of Metals Science, TU 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, Prague, 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, Miskolc, Hungary
• West Bohemia University, Plzeň, Czech Republic
• Magna Steyr, Gratz, Austria
• Kremenchuk Mykhailo Ostrohradskyi National University, Ukraine

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 Theoretical Electrical Engineering
• 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

<table>
<thead>
<tr>
<th>Thesis type</th>
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<th>Doctoral</th>
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9.1. Journals


9.3. Textbooks

978-80-553-1322-1

9.4. Other publications

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