ANNUAL REPORT  2014

FACULTY EDUCATIONAL ENVIRONMENT
PROSTREDIE VZDELÁVANIA NA FAKULTE
ANNUAL REPORT
2014

PROSTREDIE VZDELÁVANIA NA FAKULTE
FACULTY EDUCATIONAL ENVIRONMENT
PREFACE

For the Faculty, 2014 was a year of change. Dr.h.c. Prof. Dr. Ing. Oliver Moravčík ended his term in office as the Dean. It was a period of turbulent changes in the Faculty’s development, which brought considerable achievements, including the Faculty’s position in the rating and ranking evaluations (the most significant improvement amongst engineering faculties in Slovakia), or the raising of extra budgetary funds from the European Structural Funds (during the period 2007 to 2014, we received a total of € 90 million). A milestone in the Faculty’s development was the beginning of the University Scientific Park construction. Special attention was also devoted to the elaboration of the accreditation file, the results of which will be known in 2015. Let me thank the former Dean and all staff involved in the above-mentioned achievements for all their efforts for the benefit of the Faculty.

The following are the priorities of the new Faculty Management:

- Successful completion of the University Scientific Park CAMBO construction.
- Building the devices and human resources for research and development within the structural funds, and primarily to establish the Faculty in HORIZON 2020 projects as an acceptable partner for European and world-wide research and education.
- Retaining the A-evaluation of the Faculty in the processes of complex accreditation and its position within STU.
- Supporting cooperation with practice and sustainable relations.
- Significantly raising the interest in the studies at the Faculty.

My slogan for the forthcoming period remains unchanged as I declared it during the Dean’s election:

Promote the Faculty goodwill via honest high-quality work.

Prof. Dr. Ing. Jozef Peterka
Faculty Dean
MANAGEMENT OF THE FACULTY

01/2014 – 09/2014
Dean of the Faculty
Dr. h. c. prof. Dr. Ing. Oliver Moravčík

Vice-deans
prof. Dr. Ing. Jozef Peterka
- Development
- Information Technologies
- Know-how Transfer
- Prognostics

doc. RNDr. Mária Mišútová, PhD.
- Bachelor’s Degree
- Accreditation of Bachelor’s Degree
- Motivation Scholarships
- Study Promotion

doc. Ing. Peter Schreiber, CSc.
- Master’s and PhD Degrees
- Accreditation of Master’s and PhD Degrees
- Student Social Affairs
- Education Quality, Educational Process Inspection

prof. Ing. Peter Grgač, CSc.
- Research
- International Relations
- Professional Development of Academic Staff

doc. Ing. Helena Vidová, PhD.
- Internal Relations
- Public Relations
- Publishing Activity
- Social Programmes for Staff
- Security System
- ALUMNI

10/2014 - 12/2014
Dean of the Faculty
prof. Dr. Ing. Jozef Peterka

Vice-deans
prof. Ing. Miloš Čambál, CSc.
Vice-Dean for Research

prof. Ing. Milan Marônek, PhD.
Vice-Dean for Internal and International Relations

doc. Ing. Peter Pokorný, PhD.
Vice-Dean for Development

doc. Ing. Peter Schreiber, CSc.
Vice-Dean for the Educational Process
INSTITUTES OF THE FACULTY

INSTITUTE OF MATERIALS SCIENCE
INSTITUTE OF PRODUCTION TECHNOLOGIES
INSTITUTE OF PRODUCTION SYSTEMS AND APPLIED MECHANICS
INSTITUTE OF INDUSTRIAL ENGINEERING AND MANAGEMENT
INSTITUTE OF SAFETY, ENVIRONMENT AND QUALITY
INSTITUTE OF APPLIED INFORMATICS, AUTOMATION AND MATHEMATICS
RESEARCH CENTRE OF PROGRESSIVE TECHNOLOGIES

DIVISIONS OF THE FACULTY

DIVISION OF COMMUNICATION AND INFORMATION SYSTEMS
DIVISION OF ACADEMIC ACTIVITIES
DIVISION OF KNOWLEDGE MANAGEMENT
DIVISION OF ECONOMIC AND ESTATE ACTIVITIES
DIVISION OF ESTATE ACTIVITIES
DIVISION OF PERSONNEL AND ADMINISTRATION

FACULTY WORKPLACES

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
TRAINING CENTRE IN KOMÁRNO
TRAINING CENTRE IN DUBNICA n./VÁHOM

FACULTY FACILITIES

STUDENT HOSTEL AND CANTEEN

SCIENTIFIC BOARD (UNTIL 31/10/2014)

Chair:
Dr.h.c. Prof. Dr. Ing. Oliver Moravčík

Members:
Prof. Ing. Karol Balog, PhD.
doc. RNDr. Mária Behúlová, CSc.
Prof. Ing. Miloš Cambál, CSc.
Prof. Ing. Alexander Caus, Dr.Sc.
Prof. Ing. Peter Grigat, CSc.
doc. Ing. František Hortál, PhD.
Prof. Ing. Andrea Chlapeková, PhD.
Prof. Ing. Jozef Janovec, Dr.Sc.
Prof. Ing. Peter Jučiš, CSc.
doc. Ing. Mária Kapustová, PhD.
doc. Ing. Martin Kusý, PhD.
Prof. Ing. Ján Lokaj, PhD.
Prof. Ing. Milan Mrônek, PhD.
Prof. Dr. Ing. Jozef Peterka
Prof. Ing. Jozef Sablik, CSc.
Prof. Ing. Peter Sakál, CSc.
doc. Ing. Peter Schreiber, CSc.
Prof. Ing. Maroš Soldán, PhD.

External members:
vis. Prof. Ing. Peter Podrek, PhD.
doc. PhDr. Ing. Aleš Gregar, CSc.
Prof. Dr.-Ing. habil. Peter Husár
Prof. Ing. Lubomír Jahnátek, PhD.
Ing. Matej Korec, PhD.
vis. Prof. Ing. Ludovít Kupča, PhD.
ing. Juraj Lapin, Dr.Sc.
Prof. Ing. Ervin Lumnitzer, CSc.
Prof. Ing. Milan Gravec, PhD.
Prof. Dr. Ing. Milan Šiga
Dr. Ing. František Simančík
vis. Prof. Ing. Daniel Švitek, PhD.
Prof. Ing. Jozef Zaječ, CSc.

The First Welding Association, a.s. Bratislava (Slovakia)
University of Tomáš Bata, Zlín (Czech Republic)
Technical University, Ilmenau (Germany)
Ministry of Agriculture and Rural Development SR
VÚJE, a.s. Trnava (Slovakia)
ÚMMS SAV, Bratislava (Slovakia)
Technical University, Košice (Slovakia)
Technical University, Košice (Slovakia)
University of Žilina, Žilina (Slovakia)
ÚMMS SAV Bratislava (Slovakia)
Agrolet, s.r.o. Bratislava (Slovakia)
Technical University, Prešov (Slovakia)

HONORARY MEMBERS OF THE SCIENTIFIC BOARD

Prof. Dr.Sc. Dr. Ing. Michael E. Auer
vis. Prof. Ing. Miroslav Božík, PhD.
Ing. Peter Doll
Prof. Ing. Aleš Dudaček, PhD.
doc. Ing. Fedor Gömöry, DrSc.
Prof. Dr. Ing. Béla Illes
Prof. Ing. Jiří Kliber, CSc.
ing. Luboš Lopatka, PhD.
ing. Tibor Mikus, PhD.
ing. Jozef Zelinka

IGIP (Austria)
JAVYS a.s. Bratislava (Slovakia)
SACHS a.s. Trnava (Slovakia)
VŠB TU Ostrava (Czech Republic)
SAV Bratislava (Slovakia)
FMEI Miskolc (Hungary)
VSB Technical University, Ostrava (Czech Republic)
Zdravie, s.r.o. (Slovakia)
Trnava Self-governing Region (Slovakia)
HBPO Slovakia s.r.o. Lozorno (Slovakia)

Secretary: doc. Ing. Roman Moravčík, PhD.
SCIENTIFIC BOARD (SINCE 01/11/2014)

Chair:
Prof. Dr. Ing. Jozef Peterka

Vice-chair
Prof. Ing. Miloš Čambáš, CSc.

Internal members:
Prof. Ing. Maroš Soldán, PhD.
Prof. Ing. Peter Grgač, CSc.
Prof. Ing. Jozef Janovec, DrSc.
Prof. Ing. Lubomír Čaplovič, PhD.
Prof. Ing. Peter Šugár, CSc.
Prof. Ing. Peter Jurči, PhD.
Prof. Ing. Alexander Čaus, DrSc.
Prof. h.c. Prof. Ing. Karol Velšek, CSc.
Prof. Ing. Milan Marošek, CSc.
doc. Ing. Roman Kořík, PhD.
Dr. h.c. Prof. Dr. Ing. Štefan Vrásťa, PhD.
Prof. Ing. Pavol Tanuška, PhD.
Prof. Ing. Peter Jurči, PhD.
Prof. Ing. Karol Balog, PhD.

External members:
Ing. Eva Kucháriková, CSc.
Visiting Prof. Ing. Peter Fodrek, PhD.
Ing. Jaroslav Holeček, PhD.
Prof. Dr. Ing. František Holeček, PhD.
doc. Ing. Ivo Hlavatý, Ph.D.
Prof. Dr. Ing. Milan Marošek, PhD.
Prof. Ing. Jozef Zajac, CSc.

ACADEMIC SENATE (UNTIL 21/10/2014)

Chair:
Prof. Ing. Miloš Čambáš, CSc.

Chair of Academic Staff Chamber:
Prof. Ing. Karol Balog, PhD.

Chair of Student Chamber:
Ing. Michal Ondruška

ACADEMIC SENATE (since 22/10/2014)

Term of office: 22/10/2014 – 31/10/2018

Chair:
doc. Ing. Milan Nad, CSc.

Chair of Academic Staff Chamber:
doc. Ing. Pavel Važan, PhD.

Chair of Student Chamber:
Ing. Mária Draxlerová

ACADEMIC SENATE (since 22/10/2014)

Term of office: 22/10/2014 – 31/10/2018

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Chair of Student Chamber:
Ing. Mária Draxlerová

Academic Staff Chamber:
Prof. Ing. Karol Balog, PhD.
Prof. Ing. Miloš Čambáš, CSc.
doc. Ing. Lubomír Čaplovič, PhD.
doc. Ing. Andrea Chlapeková, PhD.
doc. Ing. Augustín Górič, PhD.
doc. Ing. Peter Pokorný, PhD.
doc. Ing. Róbert Riedlmajer, PhD.
Prof. Ing. Jozef Sablik, CSc.
doc. Ing. Milan Marošek, PhD.
doc. Ing. Štefan Vrásťa, PhD.
doc. Ing. Mgr. Róbert Vrásťa, PhD.

Student Chamber:
Ing. Michal Ondruška
Bc. Martin Krivý
Ing. Jozef Horváth
Ing. Júlia Kurnátová
Miroslav Fuller
Bc. Miriama Koříkiová
Ľubomír Gabriš

Academic Staff Chamber:
doc. RNDr. Mária Behúlová, CSc.
doc. Mgr. Dagmar Cagánová, PhD.
doc. Ing. Lubomír Čaplovič, PhD.
doc. Ing. Andreja Čaplovič, PhD.
doc. Ing. Augustín Górič, PhD.
doc. Ing. Mária Hudáková, PhD.
doc. Ing. Martin Kusý, PhD.
Prof. Ing. Pavol Tanuška, PhD.
doc. Ing. Stefan Václav, PhD.
doc. Ing. Helena Vidová, PhD.
doc. Mgr. Róbert Vrásťa, PhD.

Student Chamber:
Andrej Barcaj
Patrik Bystrický
Erik Herceg
Bc. Jakub Jardel
Bc. Veronika Laliová
Bc. Dávid Tóth
The priorities for development in 2014 were as follows:

28/08
Signed Agreement for the next stage of the University Scientific Park construction - Research Workplace of Automation and ICT Implementation in Production Processes and Systems with laboratories

10/09
Opening ceremony of the 2nd phase of the USP construction

Construction of the second phase of the University Scientific Park (USP) at STU MTF in Trnava was started on 10/09/2014 by laying the foundation stone for the buildings of the Research Workplace of Automation and ICT Implementation in Production Processes and Systems with laboratories. The objective of this project stage is to build a scientific workplace for the development of Management and Information Technologies and the related research and development of the information, communication and management structures in terms of the knowledge-based systems at all levels.
KEY ACTIVITIES OF THE FACULTY DEVELOPMENT IN 2014:

- increased storage capacity for students and teachers,
- installation of multimedia equipment in the Faculty teaching premises,
- complex reconstruction of the Internet wiring in the Student Hostel of Miloš Uher,
- implementation of the new ARL (Advanced Rapid Library) all-University Library System,
- creation of a central repository of digital objects in the field of publication activity and its acceptance,
- creation of navigation tools for verification of the publication environment quality, including a new library portal,
- indexation of “Vedecké práce MTF STU” (Research Papers of STU MTF) journal in 22 databases (including Inspec, Ebsco etc.),
- access to seven new worldwide databases,
- project preparation of future constructions,
- architectonic study of CAMBO.

The major development project in MTF is the "University Scientific Park CAMPUS STU MTF". In 2014, its construction proceeded by creating the building, the "Workplace of Materials Research with laboratories, including its connection to the Campus", and construction started on the new building, the "Research Workplace of Automation and ICT Implementation in Production Processes and Systems" (construction proceeds into 2015; estimated completion date: 2015).

20/01 Meeting with the STU Rector and vice-Rectors at MTF regarding the Calls for Horizon 2020 projects submission
28/08 Signed Agreement of the next stage of USP construction - Workplace of Automation and ICT Implementation in Production Processes and Systems with laboratories
10/09 Opening ceremony of the 2nd stage of USP construction
29/09-3/10 International Engineering Fair in Brno – participation of STU MTF
18/11 Presentation days of Companies
15/12 Establishment of Database for cooperation with practice (See the picture)
Other activities of the Faculty development in 2014:

Co-operation with practice

"Intensive cooperation with practice is indispensable for the Slovak University of Technology as a research university. Research greatly enhances the educational and research activities by reflecting the current need to provide unique solutions to the acute engineering problems, accelerate transfer of knowledge and provide funds. It contributes to the fulfilment of the Lisbon Strategy. The students and doctoral candidates involved in this significant activity along with the knowledgeable and respected top university employees can thus directly connect their projects with the research projects in industry. Forms of cooperation between the University and practice are of a different nature: there are real problems solved within the direct contract or order, research and innovation projects solved with partners from the industrial sector, the involvement of SMEs into international projects, student practice, mobility and internship in enterprises both at home and abroad, support for the development of small firms etc. Last year, vivid cooperation with practice was carried out in the University workplace, as documented by a number of contractual projects concluded with practice." (cit. Redhammer, R., STU Rector, 2011).

STU MTF is a research member of the "Knowledge Faculty for Economic Practice" project, ITMS 26110230113. Universities significantly contribute to the economic development of their region. An increased demand for knowledge is an incentive for streamlining the transfer of discoveries and outcomes of research and development into the economic sphere. The strategic objective of the research and development support for practice is the increased cooperation and communication among universities and presentation of their research and development areas for economic/business practice. Only such universities can be accepted in practice, since they share a relevant level of science with the wider community. They do not hesitate to maximise their potential for the creation of practice values and develop effective means for the initiation and integration of their activities and relations with the external environment. Acquisition of new partners through the project "Knowledge Faculty for Economic Practice" significantly supports the Faculty strategic objectives within the Long-term objective of the Faculty development, thus contributing to the general objective of active connection of academia and economic practice.

New partners of STU MTF – Agreements of cooperation signed in 2014 within the "Knowledge Faculty for Economic Practice" project

<table>
<thead>
<tr>
<th>Partner</th>
<th>Country</th>
<th>City/Town</th>
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<tbody>
<tr>
<td>DTF Technology GmbH</td>
<td>Germany</td>
<td>Dresden</td>
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<td>IS4U, s r.o.</td>
<td>Czech Republic</td>
<td>Brno</td>
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<td>DVK Maschinenbau GmbH</td>
<td>Hungary</td>
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<td>NV Bekarta SA</td>
<td>Belgium</td>
<td>Zwevegem</td>
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<td>Matador Industries, a.s.</td>
<td>Slovak Republic</td>
<td>Dubnica n./Váhom</td>
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<td>Bizzcom, s r.o.</td>
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<td>Velké Oveště</td>
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<td>Kellys Bicycles, s r.o.</td>
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<td>Hungarian</td>
<td>Kecksernet</td>
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AWARDS IN 2014:

12/12/2014

The STU MTF Dean's Awards in the categories of:

COPYRIGHT CERTIFICATES AND PATENTS
doc. Ing. Pavol Božek, CSc.
doc. Ing. Peter Pokorný, PhD.

ENTREPRENEURIAL ACTIVITY
doc. Ing. Marián Hazlinger, PhD.
### COMPANY PRESENTATIONS AT STU MTF IN 2014:

<table>
<thead>
<tr>
<th>Name of presentation</th>
<th>Description of presentation</th>
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<tr>
<td><strong>JOB DAY</strong></td>
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</table>
On the 12th March 2014, STU MTF organised the 2nd annual "Job Day" with the aim to provide the future Faculty graduates/potential job applicants with information about vacancies within companies, and to prepare conditions for effective communication between students and employers. |
| **Campus Week 2014** | From the 30th June to the 3rd July, Campus Week, the 5th International Congress for universities under the title "Trends in Automation and Production" took place at the premises of the Festo Didactic Company in Denkendorf and Esslingen. The Congress was attended by Mr. T. Horák, the Festo spol. s r.o. representative, and Prof.h.c. Prof. Ing. K. Velšek, CSc., Prof. Ing. P. Tanuška, PhD. and Ing. M. Kopček, PhD., representatives from two MTF Institutes (UVSM and UIAM). The key topic of the contributions presented at the Congress was the concept of the 4th generation of the industrial revolution under the title Industrie 4.0. |
| **Concept of the digital company and its application in automotive practice** | The workshop introduced the concept of the "Digital Company" – a virtual image of real production and logistics via the processes and selected SW tools of the Tecnomatix® package in virtual conditions. This was followed by presentation of the project, its objectives, stages, the project team and its output. The project involved 15 students of all study degrees, who became a part of the project team. |
| **ESAB 2014** | A seminar within the cycle on welding and weldability, organised in cooperation with ESAB Slovakia s.r.o. and STU MTF. Guarantor of the event: UVTE. |
| **Visit to the Robert Bosch Company, spol. s r. o. České Budějovice** | UPIM initiated an excursion of students of UBEK and UPIM to Robert Bosch, spol. s r. o. České Budějovice on 28/03/2014. |
| **Festival of Science 2014** | The Festival of Science and Innovation 2014 was organised to support the official opening of the regional office of the European Alliance for Innovation (EAI) in Slovakia, as a result of cooperation between STU MTF and the European Alliance for Innovation (EAI) in Brussels. |
| **Careers in VW Slovakia** | 27/11/2014 – a presentation delivered by employees of Volkswagen Slovakia a.s. Bratislava at STU MTF. |
| **Summer school of mechatronic trainees 2014** | On the 4th - 5th September 2014 – the “Summer school of mechatronic trainees” was organised by the Institutes of UIAM and UVSM in cooperation with FESTO spol. s r.o. The event was attended by selected secondary school students who will represent the Slovak Republic in Euroskills, the international competition. |
| **STU MTF at the International Engineering Fair 2014, Brno** | Active participation of STU MTF at the International Engineering Fair in Brno on 29/09 - 03/10/2014. |
| **Night of Researchers 2014** | The “FESTIVAL of SCIENCE, Night of Researchers in Slovakia” project was supported by the 7th framework programme for research and technology development of the European Commission. The "Night of Researchers" event is organised in 33 states of Europe with the aim to familiarise the wider public with science and researchers and their contribution to everyday life. |
| **Work and Careers 2014** | STU MTF participated in the event to provide prospective candidates with information about studies at the Faculty. |
| **Presentation days of companies** | On the 18/11/2014, STU MTF organised the "Presentation days of companies” event under the auspices of the National project of "Universities as motors of the knowledge society development" with the aim of matching university students with potential employers and to promote successful Faculty graduates and their careers. |
| **JCMS and quality system in production process of plastics injection** | On the 29/04/2014, a workshop, titled the "System of JCMS and quality in the production process of plastics injection" was delivered by representatives of Johnson Controls. |
| **Special applications and DMG MORI Technologies** | On the 03 – 04/12/2014, a seminar on Special applications and DMG MORI Technologies took place in the Excellence Centre of 5-axis machining at STU MTF. |
| **TECHFORUM 2014** | On 20-23/05/2014, TECHFORUM 2014, an International Engineering Fair in Nitra took place, with active participation by STU MTF. The fair presented output of the research and development workplaces of engineering universities and their collaboration with practice. Guarantor: OPOM. |
| **Creative workshops 2014** | An event guaranteed by UPIM during March 2014 within the project "MTF passes to green". During the presentation, the participants made products from waste materials. |
| **STU MTF USP in the pages of the British Chamber of Commerce** | Presentation of the research results, achievements and research potential of the Faculty is one of the key factors of attaining credibility and acknowledgement in the outer environment. Structured presentation and promotion can show the Faculty as an acknowledged partner for the area of research and development. Information on the Faculty research portfolio and its unique and distinctive features will be presented on the pages of the British Chamber of Commerce. |
Regular meetings with experts from practice within the programme “Dialogues with practice” guaranteed by the Institute of Industrial Engineering and Management:

24/02
Dialogues with practice X. - Ing. Andrej VRÁBEL of SOVA Digital a.s. in Bratislava: “Utilisation of SW within the Digital Company concept – practical solutions”

31/03
Dialogues with practice XI. - Ing. Jan PRACHÁŘ, PhD. of the European Polytechnic Institute, Institute of Economics and Management. Topic of the presentation: “Delivery conditions of INCOTERMS® in practice of international logistics”

RESEARCH INFRASTRUCTURE PROJECTS IN 2014

<table>
<thead>
<tr>
<th>Institute/workplace</th>
<th>Operation programme</th>
<th>ITMS</th>
<th>Title of project</th>
<th>Time Period of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Materials Science and Technology</td>
<td>Research</td>
<td>262501200053</td>
<td>A comprehensive modernisation of material and non-material (information and communication) educational infrastructure of the Bottova Campus</td>
<td>10/2012-06/2015</td>
</tr>
<tr>
<td>Faculty of Materials Science and Technology</td>
<td>Research</td>
<td>26110230116</td>
<td>The development of human resources in the field of research and development for the material research Workplace of the University Scientific Park CAMBO</td>
<td>10/2013-06/2015</td>
</tr>
<tr>
<td>Institute of Production Technologies + MIKON, s.r.o.</td>
<td>Research</td>
<td>26220220137</td>
<td>Industrial research into silent blocks for excessive load under extreme temperatures in the field of industrial application</td>
<td>11/2011-10/2015</td>
</tr>
<tr>
<td>Institute of Applied Informatics, Automation and Mathematics + Qintec, s.r.o. Trnava</td>
<td>Research</td>
<td>26220220159</td>
<td>Research into monitoring and assessing the non-standard states in the vicinity of a nuclear power plant</td>
<td>04/2012-09/2014</td>
</tr>
<tr>
<td>Institute of Industrial Engineering, Management and Quality</td>
<td>Education</td>
<td>26110230115</td>
<td>Centre for the development of competencies for the field of Industrial Engineering and Management</td>
<td>10/2013-09/2015</td>
</tr>
<tr>
<td>Division of Knowledge Management</td>
<td>Education</td>
<td>26110230113</td>
<td>Knowledge-based Faculty for economic practice</td>
<td>10/2013-09/2015</td>
</tr>
<tr>
<td>Research Centre of Progressive Technologies</td>
<td>Research</td>
<td>26210120017</td>
<td>Centre for research and development in the field of the electron-beam and progressive arc technologies of welding, cladding and surface-finishing (WeldCenter)</td>
<td>10/2012-06/2015</td>
</tr>
<tr>
<td>Institute of Production Technologies</td>
<td>Research</td>
<td>26210120020</td>
<td>Technical infrastructure of research and development for the field of the contact and contact-free methods of measurement</td>
<td>10/2012-06/2015</td>
</tr>
<tr>
<td>Faculty of Materials Science and Technology</td>
<td>Research</td>
<td>26220220179</td>
<td>University Scientific Park „CAMPUS STU MTF“ – CAMBO</td>
<td>03/2013-06/2015</td>
</tr>
<tr>
<td>Faculty of Materials Science and Technology and Faculty of Civil Engineering Bratislava</td>
<td>Research</td>
<td>262501200070</td>
<td>Complex modernisation of the educational, material, information and communication infrastructure of the CAMPUS Bottova II, and reconstruction of the Kočovce training centre</td>
<td>04/2014-09/2015</td>
</tr>
</tbody>
</table>

This part of the Annual Report 2014 was verified by prof. Dr. Ing. Jozef Peterka and doc. Ing. Peter Pokorný, PhD.
The Faculty of Materials Science and Technology (MTF) is accredited as a university type of institution. Having undergone a complex accreditation process in 2009, the Faculty obtained the right to grant the academic titles of “Bachelor” (Bc.), “Engineer” (Ing., corresponding to Master’s degree) and “Philosophiae Doctor” (Ph.D.). In 2014, the Faculty provided 9 Bachelor study programmes, 11 Master study programmes, and 8 Doctoral study programmes. The Bachelor and Master study programmes were provided in full time form, the Doctoral programmes were offered in both full-time and part-time study forms.

ACCREDITED STUDY PROGRAMMES AT THE FACULTY

**Accredited study programmes – Bc.**
- Applied Informatics and Automation in Industry
- Production Quality
- Materials Engineering
- Personnel Policy in Industrial Plant
- Computer-Aided Production Technologies
- Industrial Management
- Production Technologies
- Production Devices and Systems

**Accredited study programmes – Ing.**
- Process Automation and ICT Implementation in Industry
- Production Quality Engineering
- Integrated Safety
- Materials Engineering
- Machining and Assembly
- Computer-Aided Design and Production
- Industrial Management
- Industrial and Art Foundry
- Processing and Application of Non-metals
- Production Devices and Systems
- Welding

**Accredited study programmes – PhD.**
- Process Automation and ICT Implementation
- Integrated Safety
- Production Quality Engineering
- Materials Engineering
- Industrial Management
- Processing and Application of Non-metals
- Machining Technologies and Materials
- Production Devices and Systems

STUDY SYSTEM AND ORGANISATION

The credit system introduced at the Slovak University of Technology (STU) has been implemented in all three degrees of the university education at STU MTF, in compliance with the law and accreditation within the defined standard length of study for both full-time and part-time study forms.

**Degree 1:**
Bachelor’s study, accomplished by granting the academic title of “Bachelor” (Bc). Having successfully passed the State exam and gaining the academic title of “Bachelor” (Bc), the graduates can either continue the study at degree 2 level, or leave the Faculty.

**Degree 2:**
Master’s study, accomplished by gaining the academic title of engineer – “Ing.” (corresponding to MSc.)

**Degree 3:**
Doctoral study in both full-time and part-time forms. The defined standard length of study in full-time form is 3 years, in part-time form 5 years. The study is accomplished by gaining the academic title of “Philosophiae Doctor” – Ph.D.

The above-mentioned programmes at Degree levels 1 and 2 can be studied in a full-time form; the Doctoral study (Degree level 3) programmes are provided in both full-time and part-time study forms.
APPLICATIONS, ADMITANCE AND ENROLMENTS FOR STUDY AT THE FACULTY

The level of interest in study at the Faculty within individual degrees is quite stable. A decrease in the number of the students admitted and enrolled was partially due to the changes introduced by the Ministry of Education of SR in financing universities, which consequently modified the policy of the Faculty management on the one hand, and also the decreasing demographic curve and the increasing number of new universities and colleges in the Slovak Republic, on the other hand.

ADMISSION PROCEDURE VARIES ACCORDING TO THE DEGREE

The admission procedure for the Bachelor’s degree is based on the applicant’s secondary school results, i.e. there is no entrance examination. An interest in the area of study certified by participation in specialised competitions is an advantage for the applicants.

The admission procedure for the Master’s degree considers the results of the entrance examinations achieved in three profile subjects within the programme studied as well as the overall study achievements of the Bachelor’s graduate.

The Faculty management perceive with satisfaction that, besides the STU MTF Bc. graduates interested in Master’s study, there is also a high number of candidates from other universities (Table.1), which is a proof of the high quality of the Faculty Master’s study programmes.

Table. 1
Master’s degree candidates: graduates of STU MTF and other universities in 2014/2015

<table>
<thead>
<tr>
<th></th>
<th>Applicants</th>
<th>From other universities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTF graduates</td>
<td>591</td>
<td>101</td>
<td>692</td>
</tr>
<tr>
<td>From other universities</td>
<td>101</td>
<td></td>
<td>692</td>
</tr>
<tr>
<td>Total</td>
<td>692</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Applicants</th>
<th>From other universities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTF graduates</td>
<td>648</td>
<td>69</td>
<td>717</td>
</tr>
<tr>
<td>From other universities</td>
<td>69</td>
<td></td>
<td>717</td>
</tr>
<tr>
<td>Total</td>
<td>717</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The admission procedure for the doctoral degree comprises of the entrance examination consisting of an interview regarding the chosen topic of the doctoral thesis and English for Specific Purposes test. The Faculty tends to increase the number of internal PhD students.

The number of full-time PhD students (Graph No. 3) depends on the financial policy of the Ministry of Education, Science, Research and Sport of the Slovak Republic; the number of scholarships allotted to a university is based upon the criterion of its achievements in the field of research (domestic grants, foreign grants, internal PhD candidates having passed the dissertation exam, number of PhD graduates and the amount and quality of publications).

Study and teaching is guaranteed by the Faculty Institutes. Each Institute provides all three degrees of education.
The number of students at each Institute is illustrated in Graph 4.

![Graph No. 4](image)

**Graph No. 4**
Number of students by degree level at particular institutes
31.10.2014

<table>
<thead>
<tr>
<th>Institute</th>
<th>Bc</th>
<th>BIng</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMAT</td>
<td>101</td>
<td>119</td>
<td>375</td>
</tr>
<tr>
<td>UVSM</td>
<td>375</td>
<td>610</td>
<td>360</td>
</tr>
<tr>
<td>UVTE</td>
<td>375</td>
<td>262</td>
<td>152</td>
</tr>
<tr>
<td>UPIM</td>
<td>214</td>
<td>232</td>
<td>22</td>
</tr>
<tr>
<td>UBEK</td>
<td>22</td>
<td>34</td>
<td>25</td>
</tr>
<tr>
<td>UIAM</td>
<td>22</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

**Abbreviations used:**
- UMAT - Institute of Materials Science
- UVSM - Institute of Production systems and Applied Mechanics
- UVTE - Institute of Production Technologies
- UPIM - Institute of Industrial Engineering and Management
- UBEK - Institute of Safety, Environment and Quality
- UIAM - Institute of Applied Informatics, Automation and Mathematics

**Study conditions**
Regarding the premises and administration, the study conditions at the Faculty can be considered favourable. Access to textbooks has been improved by implementing the model of electronic textbooks available to all the Faculty students free of charge. To meet the student’s requirements, Saturday office hours in the Registrar’s Office and the Academic Library were introduced. As for social policy, significant is the study at the detached workplaces in Komárno and Dubnica nad Váhom (the first year of bachelor studies).

Besides study, the students can be involved in the institutional research activity either by participating in research projects and the Student Research Conference, or working as research student-helpers. The Student Research Conference provides the bachelor’s and master’s students with a chance to get acquainted with research methods, to analyse a research task and articulate the attained research results in both oral and written forms, and to defend their opinion in a professional forum. PhD students can present partial results of their research projects at the International Doctoral Seminar, an annual event organised by the Faculty and attended also by PhD students of foreign universities and research Institutes from home and abroad.

Besides the students of Slovak citizenship, there are also foreign students studying at STU MTF. Unfortunately, the Faculty is failing to attract a higher number of foreign students; their percentage is quite low so far.

**QUALITY OF EDUCATION AND EMPLOYABILITY OF GRADUATES**

Education efficiency and quality can be assessed by various criteria and parameters, such as the placement rate of graduates and the unemployment rate regularly announced by the Ministry of Labour, Social Affairs and Family, SR. The fact that STU ranks among the universities with the lowest unemployment rate is justified by the educational quality and interest in social practice of the Faculty graduates.

![Graph No. 5](image)

**Graph No. 5**
Number of Faculty graduates in the last four years

The aim of the educational process is to train graduates for their future profession. Its efficiency is measured by various methods, the most important of which is the method of feedback mapping the student’s opinions regarding the study contents, activities of the educational process implementation, study environment and teaching strategies. Besides these tools of educational quality improvement, the Faculty carries out a survey regarding student satisfaction with the aim to identify weaknesses in the education process, the teaching strategies, as well as the administration and organisation.

In accordance with the law on Universities No. 131/2002 Coll., the STU MTF students have a chance to participate in a survey via a questionnaire available on the Faculty website. The questionnaire is comprised of the following areas: process and organisation of the study, the quality and professional behaviour of teachers, the quality of the teaching process, accommodation and other areas.

The electronic questionnaire evaluating the level of education from the perspective of students, during the academic year 2012/13 was responded to by 463 students of all study degrees. The Faculty management deals seriously with the student suggestions from the questionnaire and informs the students and teachers on possible solutions or improvements.
SOCIAL MATTERS

Accommodation and board for students are provided in the Student Hostel of M. Uher and the adjacent cafeteria and snack bars. Students appreciate the relatively high standard of comfort including free internet connection, as well as the availability of sports facilities such as a fitness centre, gym, indoor swimming pool and tennis courts, directly on the campus.

Besides the above-mentioned facilities, students can take advantage of social scholarships and other bonuses such as the ones for study achievements and motivation, study loans and consultancy in the Career Centre. All of this is considered when designing time-tables, the length of a training unit, the arrangement of subjects, administration of the student agenda in AIS, PC connection, medical care and the possibility of arranging one’s matters in the Registrar’s and Academic Library on Saturdays. A psychologist was also employed to support spiritual and mental well-being of students by helping the students to handle critical situations and to adapt to the new academic environment.

As amended by law, the social system includes both enforceable and non-enforceable scholarships provided within the framework defined by the Act on Universities or the internal University and Faculty legislations.

STUDENT AWARDS IN 2014

04/03/2014
Natália PREKOPOVÁ, Winter Universiade 2013 in Trentino (Italy) in individual competitions for 15 km, 1st place.

10/04/2014
Radovan HANKOVSKÝ, Slovak Academic Championships in Žilina, 3rd place in the category "kumite men" - 67 kg.

10/04/2014
Jakub KONIAR, European Championships in snooker (29/03/-10/04/2014), 2nd place.

10/04/2014, 29/04/2014 and 30/04/2014
Sport competitions “STU Rector’s Cup” the STU MTF students succeeded in the following categories:

SWIMMING: 1st place: JÁNSKÁ Miroslava: 1x 1st place, 2x 2/place, 2x 3/place, JANÍČKOVÁ Miroslava: 1x 2nd place, BAHNOVÁ Ľubica: 1x 5th place, ULEHLA Filip: 1x 1st place, 1x 2nd place, DUTKA Vladimír: 1x 3rd place, LUKAČOVIČ Andrej: 1x 5th place, 1x 6th place, MEJIA Antonio: 1x 1st place

FOOTBALL: 1st place: NETSCH Lukáš, KARAS Dávid, KARAS Martin, GALBA Juraj, DVORSKÝ Peter, CVEČKA Tomáš, HERDA Jakub, ŽÁČEK Michal, BLAŽEK Jakub, HRUBŠA David, GONDÁR Andrej, LÁNIK Filip, ŠEBEŇ Peter, DURÍŠ Jakub.

TABLE TENNIS: TARIŠKOVÁ Zuzana: 3rd place, Ján JUROŠ, Marek FARBIAK, Richard BEBLAVÝ, Matej MARKUS.

VOLLEYBALL: 3rd place: Petra FOLTÍNOVÁ, Kristína SATUROVÁ, Michaela ŽILIKOVÁ, Michaela FILIPOVÁ, Maria KRAJČOVIČOVÁ, Viktória MICHELČIKOVÁ, Katarína JASSUŠOVÁ, 5th place: Juraj KÁKOŠ, Tomáš HILSTRA, Martin GULABA, Michal MAGDOLEN, Michal KOVÁČ, Matúš DEMIAN, Tomáš KICSINDI.

TENNIS: KUBICA Peter: 3rd place, VINCEOVÁ Petra: 3rd place, LUCAČOVIČ Michal, HOLOŠ Peter, JUŘAŇ Peter.

BASKETBALL: 6th place: Matej HRUŠOVSKÝ, Peter NAGY, Tomáš SLANINKA, Antonio MEJIA, Jakub PAVLAČKA, Peter ONDRUŠKA, Alžbeta SPIŠÁKOVÁ.

FLOROBALL: 4th place: HLADÍK Marián, ČÁK Dominik, PETRIK Petr, ŠUPÍK Marián, KRÍDL Radko, KOVALOVSKÝ Štěpán, MAGDOLEN Tomáš, MIŠUTA Andrej, HLAVÁČ Marek, FÁBIK František, HANO Patrik, MAŠEK Michal, ŠIŠOLÁK Karol.

HOCKEY: 4th place: Patrik HANO, Lubomír ŽAŤKO, Mikuláš VIZVÁRY, Martin PONIŠT, Pavel PALÍČEK, Jan BARTEK, Tomáš DRGOŇ, Ján GUZLEJ, Michal KOLLÁR, Juraj CHROMÍK, Rado HANKOVSKÝ, Tomáš NÁDASKÝ, Martin MICHALKA, Adrián NESTEŠ, Marek HURAJT.

UNIVERSITY REGATA: 2nd place: ŽILIKOVÁ Michaela, PILCH Peter, JUROŠ Ján, LUBUŠKÝ Peter, FAZEKAŠ Peter, 3rd place: ONDRUŠKA Michal, KURNÁTOVÁ Júlia, HURAJT Marek, VLÁŠEK Matúš.

10/05/2014
Jakub KONIAR, SR Championships in snooker (3rd - 4th May 2014) Champion of the Slovak Republic.

13/05/2014
Vladimír KRAJČO, 2nd place, 10th year of the International Student Research Conference 2014 in the Master’s category in Zlín, Czech Republic.

13/05/2014
Ján JUROŠ, 2nd place, 55th year of the International Student Research Conference of the Faculty of Wood Science and Technology in Zvolen.

03/06/2014
Miroslava JÁNSKA, Slovak Academic Championships, 3rd place in 100 meters/backstroke and 2x1st place in the Trnava Relay.

17/06/2014
Lubomír BENO, 2nd place, Universiade in Kazan 2013, canoe regatta.

27/06/2014
Filip PRAJ, 6th place in the category of juniors, European Championships in shotgun in Szarospuszta, Hungary (16 - 27/06/2014).
02/07/2014
Peter ELIÁŠ, 2nd place in the competition for the best Bachelor’s and Master’s theses within engineering universities in Slovakia.

08/07/2014
Awarding students 2013/2014

15/07/2014
Peter ELIÁŠ, 2nd place in the all-Slovakia competition of SOVA Digital and Siemens Co. “The best Master thesis” focused on the information technologies application in the field of mechanical engineering.

13/10/2014
Finals of the “The Best Student Project 2014” competition:
1st place: Vladimír KRAJČO: Design of an effective assembly process in the assembly workplace VS 20 via MTM UAS in ZF Boge Elastmetall Slovakia Co. in Trnava, a.s.
2nd place: Filip GALGÓCI: Design of the layout modification of the sales warehouse in the division of the clutch and dual-mass flywheels production of ZF SACHS Slovakia, a.s.
3rd place: Ján JUROŠ: Proposal of a more effective process of exchanging dies of vulcanising presses by the SMED (Single Minute Exchange of Dies) method in ZF Boge Elastmetall Slovakia, a.s., Trnava.

Special prize for the best thesis in the field of Quality Management- Marián DRÁBIK: Project of increasing the efficiency of LPA system via Kamishibai in Martinrea Slovakia Fluid Systems, s.r.o.,
Special prize from a competition organiser - Matúš ZORIČÁK: Analysis of quality costs in a company and their optimisation.

22/10/2014
Dean’s honourable mention for excellence in the final thesis – list of students

22/10/2014
Dean’s honourable mention for excellence in the final thesis in the academic year 2012/2013

05/11/2014
Gabriel GASPÁR-1st place in the competition of innovative ideas RESEARCH STAR

18/11/2014
“Student of the Year 2014” – for STU MTF:
Sarah MÜLLEROVÁ – the best student at Bachelor’s degree level.
Monika HORIČKOVA- the best student at Master’s degree level.
Marek ADAMEC- the best student at Doctoral degree level.
Jarošlav MRÁŽ- extraordinary achievement in the field of research and development.
Miroslava JANSKÁ- outstanding STU representative in sport.

09 – 11/12/ 2014
Students awarded in the competitions within the STU MTF "Sports Week" in the following categories:

TABLE TENNIS
Women - 1st place Lucia DANIŠOVÁ, 2nd place Katarína JASSUŠOVÁ, 3rd place Anna SPONIÁKOVÁ.
Men – 1st place Tomáš LUKÁČ, 2nd place Marek VAJDA, 3rd place Richard BEBLAVÝ.

SWIMMING
1st place Miroslava JANŠKA, 2nd place Andrej LUKÁČOVIČ, 3rd place Tomáš ZELENÁY.

FOOTBALL: 1st place ČIERNA RUKA, 2nd place BARONI, 3rd place VLČÁCI.

VOLLEYBALL: 1st place TANKISTI, 2nd place ISHIKAWA TEAM, 3rd place OOO TEAM.
12/12/2014

STU MTF Dean’s Award:

The best student publication activity: Pavel Bílek, Marcel Kuracina, Martin Neštícky.
The best student at Bachelor’s degree level: Michal Sležák, Martin Mužila, Martina Kamenská, Dávid Soóky, Monika Záměníková, Matúš Martinec, Katarína Stanková, Jaroslav Gázd, Ervin Hillier.
The best student at Master’s degree level: Tomáš Vágovič, Silvester Grigel, Dávid Kyselica, Martin Krupa, Milan Ligó, Tomáš Fábiš, Petra Haršányová, Pavlína Kočíšková, Jozef Šild.

Student extracurricular activities for the Faculty benefit: Michal Ondruška.

The aim of the SR National Competition for Quality 2013, held on 11th November 2013, was to “award the best publication in the field of work quality, production and life” to gain and disseminate new knowledge in the field of work quality, production and life in Slovakia for sustainable improvement and leading innovations. Petra Kosnáčová, an STU MTF student, was awarded in the category of the best Master thesis. Her thesis was entitled the “Application of statistical methods in process improvement”. Diplomas were granted by Tomáš Malatinský, SR Minister of Economy and Jozef Mihok, the chair of the SR Office for standardisation, metrology and testing.

Bc. Krajčo Vladimír, an STU MTF student won 2nd place in the 10th year of the ŠVOČ 2014 International Conference, Master’s category, organised at the Faculty of Economics and Management, Tomáš Bata University in Zlín, Czech Republic. Bc. Juraj Jáno, an STU MTF student also won 2nd place in the 55th year of the International Student Research Conference at the Faculty of TU Wood Science and Technology in Zvolen.

Jaroslav Mráz, CEO of IGEEK Co. and an STU MTF student, was awarded the Prize of the Minister of Education in the all-Slovakia Student Entrepreneurial Competition, and his IT enterprise launched several iPhone and Android applications successful also abroad.

Jakub Koniar – 2nd year STU MTF Bachelor student, a snooker player, became the SR Master in the SR Snooker Championships on the 3rd – 4th May 2014. Besides, he succeeded in the European Snooker Championships in Northern Cyprus on 29/03 - 10/04/2014, where he won 2nd place in game No. 8, thus gaining the historic first medal for Slovakia in the category.

Radoslav Mráz, CEO of IGEEK Co. and an STU MTF student, was awarded the Prize of the Minister of Education in the all-Slovakia Student Entrepreneurial Competition, and his IT enterprise launched several iPhone and Android applications successful also abroad.

Radovan Hankovsky, an STU MTF student, participated in the Slovak Academic Championships in Žilina, winning 3rd place in the category “kumite men” – 67 kg.

Nataša Prekopová, an STU MTF student, participated in the Winter Universiade 2013 in Trentino, Italy, winning 1st place in the individual competition for 15 km.

The Faculty Dean awarded extraordinary scholarships for student mobility in compliance with VP No. 8/2013 of the STU Scholarship Code and VP No. 2/2014 of the STU MTF Scholarship Code to the following doctoral and master students:

Beňák Filip, Bc.
Greguš Róbert, Bc.
Niklová Petra, Bc.
Lukášová Simona, Bc.
Mikulášková Justína, Bc.
Petráš Rastislav, Mgr.
Pučíková Lenka, Ing.
Woolliscroft Paul, MSc.
Neštícký Martin, Ing.
Samardžićová Michaela, Ing.

This part of the Annual Report 2014 was verified by doc. Ing. Peter Schreiber, PhD.
RESEARCH AND INTERNATIONAL RELATIONS

RESEARCH AWARDS IN 2014:

04/06/2014
“Teach me how to understand science” competition – contribution “How a rainbow emerges” by the authors Ing. Jakub Franík, Ing. Peter Cuninka, Ing. Andrea PETERKOVÁ (doctoral student in UIAM MTF), 4th place.

Summer 2014
The best poster in the ISMANAM Conference in Cancun (Mexico): Eva Babalová and Mária Behúlová

02/09/2014
The Institute of Sustainable Social Responsibility of Czech and Slovak Republics o.p.s., granted the 2nd place to the STU MTF Institute of Industrial Engineering and Management in the competition “Sustainable Social Responsibility of the Czech and Slovak Republics in 2013”. The competing team was led by Prof. Ing. Peter Sakál, CSc.

17/09/2014
The Dean of the TU Faculty of Mechanical Engineering in Košice awarded a platinum medal to Dr.h.c. Prof. Dr. Ing. Oliver MORAVČÍK for successful cooperation and support.

14/10/2014
STU Rector Prof. Ing. Róbert Redhammer, PhD. presented the award for the most successful project of young researchers in STU MTF to Ing. Eva Babalová, PhD.

02/10/2014
The TTSK award was presented to Dr.h.c. Prof. Dr. Ing. Oliver MORAVČÍK for outstanding contribution to science and educational development.

5/12/2014
The STU Rector’s Award of “Professors and Scientists of the year 2014”
Dr. h. c. Prof. Dr. Ing. Oliver MORAVČÍK – for outstanding achievements in education, research and development activities in the field of automation and applied informatics.
Mgr. Marián PALCUT, PhD. – for a complex study of degradation processes in new and perspective materials.

20/11/2014
Award of the SR Office for Standardisation, Metrology and Testing “National Award of the Slovak Republic for Quality 2014 – for life-long contribution in the field of quality” to Prof. Ing. Alexander LINCZENYI, CSc. – STU MTF Professor Emeritus.

12/12/2014
The STU MTF Dean’s Award in the following categories:

BEST DISSERTATION THESIS
Ing. Alica Bartošová, PhD.
Ing. Delgado Sobrino Daynier Rolando, PhD.
Ing. Michaela Samardžievová, PhD.

BEST HABILITATION THESIS
doc. Ing. Jana Šugárková, PhD.

CONTRIBUTION IN THE FIELD OF THE FACULTY RESEARCH AND ACCREDITATION
Prof. Ing. Alexander Čaus, DrSc.
Prof. Ing. Jozef Janovec, DrSc.
Ing. Jozef Martinka, PhD.
doc. Mgr. Róbert Vrábeľ, PhD.
RNDr. Marcel Abas, PhD.
doc. Ing. Mária Domaňková, PhD.
doc. Ing. Roman Kohák, PhD.
RNDr. Maroš Sirotiak, PhD.
NEW DOCTORS HONORIS CAUSA, PROFESSORS AND ASSOCIATE PROFESSORS IN 2014

Doctor honoris causa (Dr.h.c.)

Dr. h. c. Ing. Peter Doll
- Doctor honoris causa (25/11/2014)

Professors

Prof. Ing. Pavol Tanuška, PhD.
- Automation (26/05/2014)

Prof. Ing. Lubomír Čaplovit, CSc.
- Materials (19/11/2014)

Associate Professors

doc. Ing. Ladislav Morovič, PhD.
- Machine Technologies and Materials (02/07/2014)

doc. Ing. Jana Šugárová, PhD.
- Machine Technologies and Materials (02/07/2014)

doc. Ing. Michal Kopčák, PhD.
- Automation (10/12/2014)

doc. Ing. Richard Kuracina, PhD.
- Occupational Health and Safety (10/12/2014)

doc. Ing. Daniel Švrček, PhD.
- Production Systems (02/07/2014)

doc. Ing. Richard Kuracina, PhD.
- Occupational Health and Safety (10/12/2014)

doc. Ing. Daniel Švrček, PhD.
- Production Systems (02/07/2014)
REFERENCES ACTIVITIES IN 2014:

20/01 Meeting at MTF with the STU Rector and vice-rectors regarding the Call for Horizon 2020 projects
12/02 Opening ceremony of the Laboratory of Flexible Production Systems with robotised operation for the conditions of drawing-free production
20/03 Student Research Conference
24/04 Doctoral Conference
25/04-26/04 Festival of Science - European Forum for Innovation 2014
20/05-23/05 Presentation of STU MTF at the TECHFORUM 2014 Fair
18/07 Film festival at STU MTF
20/08 Signed Agreement on the next stage of the USP construction - Research workplace of Automation and ICT Implementation in Production Processes and Systems with laboratories
04/09-05/09 Summer School of Young Mechatronic Trainees
10/09 Opening ceremony of the 2nd phase of UVP construction
26/09 Night of researchers – participation of STU MTF
29/09-03/10 International Engineering Fair in Brno - participation of STU MTF

OVERVIEW OF CONFERENCES ORGANISED AT STU MTF IN 2014:

08-10/02 9th project meeting, excursion and final conference within the project of ”AUTOCLUSTERS”
24/04 Doctoral Conference
19/05-21/05 International Doctoral Seminar Zielona Góra 2014
26/05 ESAB 2014
03/09-06/09 Forming 2014
25/11 Seminar on intellectual property in STU
03-04/12 Seminar “Special applications and technologies DMG MORI”.

RESEARCH FOCUS

The research orientation of the Faculty of Materials Science and Technology corresponds with its pedagogic Profile and the long-term orientation of STU. As amended by Section 30, Paragraph 1, Sub-paragraph c of Act 131/2002 of the Coll. relating to Universities and as amended by other acts, the Faculty Scientific Board evaluates the faculty activity in the field of science and technology once a year.

The scientific and research activity of STU MTF research and pedagogical staff is carried out in the following forms:
- projects of basic research
- projects solved within international programmes
- projects of international collaboration
- projects of applied research and development
- projects of contractual research

The research content is focused on the following areas:
- materials research with a focus on the research, development and technological processing of the basic and new kinds of technical materials,
- research, development and optimisation of new technologies of industrial production oriented particularly on the technological processing of modern technical materials and ecologically clean processes and products and the numerical simulation of technological processes,
- process identification, automation and control, as well as information support for technological, production and organisation systems,
- research and verification of managerial control principles and their organisation structures,
- quality control and certification of processes and products,
- safety and reliability of technological equipment and systems, while emphasising the analysis methods and systems synthesis,

The STU Faculty of Materials Science and Technology in Trnava was evaluated in four areas of research in the complex accreditation of activities. The research areas related to the faculty study programmes are:

<table>
<thead>
<tr>
<th>Research area</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Engineering</td>
<td>A</td>
</tr>
<tr>
<td>Metallurgy and Materials</td>
<td>A</td>
</tr>
<tr>
<td>Information Sciences, Automation and Telecommunication</td>
<td>B</td>
</tr>
<tr>
<td>Engineering and Technology</td>
<td>B+</td>
</tr>
</tbody>
</table>

RESEARCH ACTIVITIES

In 2014, research projects under the VEGA, KEGA, APVV and other programmes were conducted at the Faculty. The number of projects in 2014 from the particular agencies, grant schemes and contractual research are as follows:

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEGA projects (Scientific Grant Agency)</td>
<td>25</td>
</tr>
<tr>
<td>KEGA projects (Cultural and Educational Grant Agency)</td>
<td>11</td>
</tr>
<tr>
<td>APVV (Slovak Research and Development Agency)</td>
<td>6</td>
</tr>
<tr>
<td>7th Framework Programme</td>
<td>1</td>
</tr>
<tr>
<td>Other foreign projects</td>
<td>2</td>
</tr>
</tbody>
</table>
FOREIGN RELATIONS

STU MTF forms cooperation on the basis of good partnership relations which are typified by mutual cooperation, profit in the area of research activities, or experience in education.

The active cooperation of our constitution, reflected in agreements concluded with foreign partners, is proof of the necessity for searching new partnerships and cooperation.

Institutes which signed contracts of cooperation with the Faculty:

Agreements on cooperation with Foreign Partners

<table>
<thead>
<tr>
<th>Foreign Partner</th>
<th>Country</th>
<th>City/Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmholz-Zentrum Dresden-Rossendorf</td>
<td>Germany</td>
<td>Dresden-Rossendorf</td>
</tr>
<tr>
<td>Technical University of Brandenburg</td>
<td>Germany</td>
<td>Dresden</td>
</tr>
<tr>
<td>Leibniz-Institute for Solid State and Materials Research Dresden</td>
<td>Germany</td>
<td>Dresden</td>
</tr>
<tr>
<td>Faculty of Machining, University in Ljubljana</td>
<td>Slovenia</td>
<td>Ljubljana</td>
</tr>
<tr>
<td>The National Research University of Information Technologies, Mechanics and Optics, Saing-Petersburg</td>
<td>Russia</td>
<td>Saint-Petersburg</td>
</tr>
<tr>
<td>Institute of Energy in Moscow</td>
<td>Russia</td>
<td>Moscow</td>
</tr>
<tr>
<td>Buehler GmbH</td>
<td>Germany</td>
<td>Düsseldorf</td>
</tr>
<tr>
<td>Ukrainian Academy of Engineering and Pedagogy</td>
<td>Ukraine</td>
<td>Charkov</td>
</tr>
<tr>
<td>Faculty of Applied Informatics and Robototechnology, UGATU UFA</td>
<td>Russia</td>
<td>Ufa</td>
</tr>
<tr>
<td>Faculty of Economics, Management and Finances UGATU UFA</td>
<td>Russia</td>
<td>Ufa</td>
</tr>
<tr>
<td>National Institute of R &amp; D for Materials Physics</td>
<td>Romania</td>
<td>Bucharest</td>
</tr>
<tr>
<td>Faculty of Physics, University of Bucharest</td>
<td>Romania</td>
<td>Bucharest</td>
</tr>
<tr>
<td>Faculty of Organisation and Informatics Varaždin, University of Zagreb</td>
<td>Croatia</td>
<td>Zagreb</td>
</tr>
<tr>
<td>Bekuent, Zwevegem</td>
<td>Belgium</td>
<td>Zwevegem</td>
</tr>
<tr>
<td>Faculty of Machine Building, Technical University of Cluj-Napoca</td>
<td>Romania</td>
<td>Cluj-Napoca</td>
</tr>
<tr>
<td>Institute of Technology</td>
<td>Poland</td>
<td>Radom</td>
</tr>
<tr>
<td>Innovation Centre for Diagnostics and the Application of Materials, Czech Technical University Prague</td>
<td>Czech Republic</td>
<td>Prague</td>
</tr>
<tr>
<td>University of Miskolc</td>
<td>Hungary</td>
<td>Miskolc</td>
</tr>
<tr>
<td>Institute for Systematic Coaching and Organisation Advisory</td>
<td>Germany</td>
<td>Berlin</td>
</tr>
<tr>
<td>Faculty of Economics and Management of University of Zielona Góra</td>
<td>Poland</td>
<td>Zielona Góra</td>
</tr>
<tr>
<td>Faculty for Management</td>
<td>Serbia</td>
<td>Novi Sad</td>
</tr>
<tr>
<td>Faculty of Information Technologies and Telecommunication of North-Caucasian State Technical University</td>
<td>Russia</td>
<td>Stavropol</td>
</tr>
<tr>
<td>Faculty of Mining and Metallurgical Engineering of Amirkabir University of Technology</td>
<td>Islamic Republic of Iran</td>
<td>Teheran</td>
</tr>
<tr>
<td>Izhevsk State Technical University of Kalashnikov</td>
<td>Russia</td>
<td>Izhevsk</td>
</tr>
<tr>
<td>Hochschule Mannheim University of Applied Sciences</td>
<td>Germany</td>
<td>Mannheim</td>
</tr>
<tr>
<td>Vocational Higher Education School in Sulechów</td>
<td>Poland</td>
<td>Sulechów</td>
</tr>
<tr>
<td>Institution of Education, Gomel State University of Francysk Skarina</td>
<td>Belarus</td>
<td>Gomel</td>
</tr>
</tbody>
</table>

VISITS OF FOREIGN GUESTS TO STU MTF IN 2014:

21/03/2014 Visit of a foreign delegation
On 21/03/2014, Vice-dean Prof. Dr. Ing. Jozef Peterka and Director of the Institute of Production Technologies, Prof. Ing. Koloman Ulrich, PhD. welcomed the delegation of the Faculty of Materials Sciences and Engineering, University in Miskolc. The delegation was led by Dean, Prof. Dr. Zoltán Gácsi, DSc. Negotiations concerned the topics of cooperation and preparation of joint projects within Horizon 2020.

09/04/2014 Meeting of the STU MTF Dean with the Vice-dean of the University of Tomáš Baťa in Zlín
On 09/04/2014, The Faculty Dean welcomed doc. Ing. David Tutek, PhD., Vice-dean of the University of Tomáš Baťa in Zlín. The meeting was attended by the Directors of the STU MTF Institutes, Prof. h.c. Prof. Ing. Karol Veľšek, CSc., Prof. Ing. Karol Balog, PhD. and Prof. Ing. Miloš Čambář, CSc. After presentations of both universities at the beginning of the meeting, the guest visited the STU MTF laboratories with the aim of agreeing future collaboration.

10/04/2014 Visit of the FVTM Dean, University of Jan Evangelista Purkyně in Ústí nad Labem
On 10/04/2014, the Faculty was visited by Prof. Dr. Ing. František Holečský, Dean of the Faculty of Production Technologies and Management, University of J. E. Purkyně in Ústí nad Labem. Negotiations with the STU MTF Vice-dean, Prof. Dr. Ing. Jozef Peterka, CSc., took place concerning future cooperation in the field of pedagogy and joint research within the Horizon 2020 call.

16/05/2014 Visit from Miba Steeltec Co., Vráble
On 16/05/2014, a workshop regarding the topic “Case studies in Quality Management” was organised in the Heavy Laboratories as part of the successful cooperation between STU MTF and Miba Steeltec Co. Vráble. The workshop was attended by representatives of Miba Steeltec Co., Radovan Martišovič, Vladimír Jánosič and Milan Duč.

11/07/2014 Visit from Szolnok University College
On 11/07/2014, the Faculty was visited by Rector Dr. Imre Túróczki and Vice-rector Dr. Márta Kőrösi, PhD. of Szolnok University College. The delegation was welcomed by Prof. Ing. Peter Gergel, CSc., Vice-dean for science, research and international relations, and doc. Ing. Helena Vidová, PhD., Vice-dean for PR and internal affairs. The negotiations were led by Prof. Ing. Miloš Čambář, CSc., doc. Ing. Ladislav Morovík, PhD., Ing. Peter Szabó, PhD. and Ing. Juraj Czifra, PhD. The meeting drafted the trends in cooperation in the fields of pedagogy, research and development, and publication, as well as the mobility of students and teachers of both institutions.
STUDENT EXCHANGES

STU MTF students participate in exchange programmes of short-term and also long-term scholarships. In 2014, the Faculty had 13 agreements in the Erasmus programme. The dominant Erasmus partners are the institutions in Poland (4 agreements), Germany (2 agreements), Czech Republic (2 agreements).

MEMBERSHIP OF SLOVAK AND INTERNATIONAL ORGANISATIONS

On an international level, the faculty cooperated with significant scientific and technical organisations in the last year. STU MTF is an institutional member of six professional international organisations. Employees of the faculty are active in different Slovak (individual memberships) and also international organisations (individual memberships) in different positions, from members to chairs, vice-chairs and members of boards.

Membership in international professional organisations

- International Institute of Welding
- Association for Heat Treatment of Metals
- International Society for Engineering Pedagogy
- European Platform of Women Scientists
- European Network Education and Training in Occupational Safety and Health
- European Alliance for Innovation

Memberships in Slovak professional organisations

- Scientific Society for Metals
- Slovak Natural Gas and Crude Oil Union
- Slovak Chamber of Commerce and Industry
- Slovak Society for Quality
- Automobile Cluster
- Slovak Society of Ergonomics
- Slovak Society of Maintenance
- Slovak Association of Libraries
- Slovak Society for Cybernetics and Informatics, Slovak Academy of Sciences
- Association of Machining Industry of the Slovak Republic

APPROVED RIGHTS TO PROVIDE HABILITATIONS AND GRANT ACADEMIC TITLES

According to the Act No. 131/2002 of Coll. relating to universities and modification, and completion of some laws as amended, the Faculty of Materials Science and Technology, Slovak University of Technology in Bratislava is entitled to carry out the habilitation process and academic promotion of Professors in the following study fields:

- 5.2.7 Mechanical Engineering and Materials
- 5.2.14 Automation
- 5.2.26 Materials
- 5.2.50 Production Machines
- 5.2.52 Industrial Engineering
- 8.3.5 Occupational Health and Safety
AWARDS IN 2014

12/12/2014
STU MTF Dean’s awards in the categories:

LONG-SERVICES AWARDS FOR MTF EMPLOYEES
prof. Ing. Miloš Čambál, PhD.
doc. Ing. Marián Hazlinger, PhD.
doc. Ing. Vladimír Labaš, PhD.
PaedDr. Elena Lukačovičová, PhD.
doc. Ing. Mária Kapustová, PhD.
doc. Ing. Maroš Martinčíkov, PhD.

INITIATIVE AND PROFESSIONAL APPROACH
Michal Bohunický

EXTRAORDINARY APPROACH TO THE PROMOTION OF THE FACULTY
Ing. Štefan Svetský, PhD.

LIST OF THE MOST IMPORTANT FACULTY EVENTS IN 2014

<table>
<thead>
<tr>
<th>Month</th>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>16/01/2014</td>
<td>STU MTF New Year’s Meeting</td>
</tr>
<tr>
<td></td>
<td>20/01/2014</td>
<td>Meeting at MTF with the STU Rector and vice-rectors regarding the Call for Horizon 2020 projects</td>
</tr>
<tr>
<td></td>
<td>29/01/2014</td>
<td>Open Day</td>
</tr>
</tbody>
</table>
February
- 03 - 07/02/2014 Doctoral Week
- 04/02/2014 World Cancer Day at STU MTF - lecture and presentations in all Faculty pavilions
- 12/02/2014 Opening ceremony of the Laboratory of Flexible Production Systems with robotised operation for the conditions of drawing-free production
- 24/02/2014 Dialogues with practice X. - Ing. Andrej VRÁBEL (SOVA Digital a.s. in Bratislava: "Utilising SW within the concept of the "Digital Company – practical solutions"

March
- 12/03/2014 JOB DAY
- 20/03/2014 Student Research Conference
- 24 - 28/03/2014 STU MTF Book Week
- 31/03/2014 Dialogues with practice XI. - Ing. Jan PRACHAŘ, PhD. "Supply conditions in INCOTERMS® in the practice of international logistics”.

April
- 04/04/2014 STU MTF Day
- 24/04/2014 Doctoral Conference
- 25 - 26/04/2014 Festival of Science - European Forum for Innovation 2014
May
15/05/2014 Meeting with former employees
19-21/05/2014 International Doctoral Seminar 2014 in Zielona Góra
20-23/05/2014 Presentation of STU MTF at the TECHFORUM 2014 Fair
26.5. ESAB 2014 Conference

June
25-26/06/2014 Admittance procedure for Bachelor’s degree studies in the academic year 2014/2015

July
07-11/07/2014 Awards given to students for their exceptional study achievements in the academic year 2013/2014 – Master’s degree studies
18/07/2014 Film festival at STU MTF
28/08/2014 Signed Agreement on the next stage of the USP construction - Research workplace of Automation and ICT implementation in Production Processes and Systems with laboratories
September
03-06/09/2014 Forming 2014 Conference
04-05/09/2014 Summer School of Young Mechatronic Trainees
10/09/2014 Opening ceremony of the 2nd phase of UVP construction
11/09/2014 Summer University for Secondary School Students
26/09/2014 Night of researchers – participation of STU MTF
29/09-03/10/2014 International Engineering Fair in Brno – participation of STU MTF

October
23/10/2014 Power sources of regions - TTSK conference

November
10/11/2014 Immatriculation of students
18/11/2014 Presentation days of companies
25/11/2014 Granting Dr. h. c. Dipl. Ing. (FH) to Peter Doll
ACTIVITIES OF THE PUBLIC RELATIONS DIVISION IN 2014

- Principal guarantor of the following events: New Year’s Meeting, Santa Claus at MTF, St. Gorazd Award and MTF Day
- Publishing updates on the Faculty website
- Faculty news in the media
- Support for other Faculty events
- Graphical design of the materials for various events
- Photo-documentation, video recordings and promotion of events
- Organisation of the Faculty’s participation in fairs and exhibitions
- Monitoring the Faculty activities, events, press releases and TV discussions
- Updating of the poster display and Technology Museum

EDITORIAL ACTIVITIES IN 2014

- accepted methodology for writing scientific monographs agreed on the basis of qualification theses
- editorial activities in the field of electronic textbooks, scientific monographs, MTF journals and proceedings
- processing of Faculty journals in the Versita system (journals are indexed in the following databases:
  - amending the statute of editorial activities, including the administration of anonymous reviewing
  - update and administration of the publishing portal at STU MTF
  - mapping the publication space of STU MTF on the Science Publishing Group website
  - implementation of custom publishing processes at STU MTF
  - provision of updates to the Slovak language section of the Faculty website
  - format and modification to STU MTF webpage of the AlumniPress Publishing House

Faculty journals - the Faculty publishes two journals - Research papers of the STU MTF and the Internet journal, Materials Science and Technology. Both journals are published in the English language. They are focused on the Faculty research fields - materials engineering, metallurgical and mining sciences, mechanical engineering (machine technologies), computer science, automation and telecommunications and environmental engineering. Both journals provide double-blind review, which guarantees:
  - impartial reviews of the quality of published outputs,
  - confirmation of established knowledge of the current state of the issues in domestic and foreign literature, the systematic analysis and synthesis,
  - explanation of the used evaluation criteria in the paper,
  - originality of the authors contribution to fundamental issues of theory, methodology and innovation, incentives for new research orientation,
  - clear characteristics of the procedures used, especially in the application of statistical and empirical data,
  - contribution to the knowledge of the current state of the art, knowledge transfer and the development in the field,
  - excluded possibility of reviewer bias against the author,
  - an increased rate of fair judgment and evaluation of benefits of the contributions.

The priority of the Faculty is the registration of journals in the monitored databases (WoS, Scopus, and so on). The main instrument to support the acquisition of the Impact Factor for the journals is electronic publishing through the MetaPress technology that provides increased awareness of the journal, an interest in publishing, citing strategy thanks to AIS (automatic indexing of published papers) and making active links to the cited works. By serving metadata in abstracting and indexing services, as well as full-text databases, issuing and registration of DOI codes (Digital Object Identifier) for each published paper is one of the steps to register the journals in databases required in the terms of accreditation.

The aim of the editorial activity at STU MTF is to secure the fast transfer of the results of research knowledge, development and education into syllabi via publications, and to enable access for students to new knowledge and to improve the teaching process.

Editorial activity has an important role, especially from the perspective of publication activities of the Faculty authors, and it has significant importance for the Faculty.
In 2014, the AlumniPress Publishing House became a member of the Association of Publishers and Booksellers of the Slovak Republic.

Publication plan for 2014:

<table>
<thead>
<tr>
<th>Type of publication</th>
<th>Published</th>
</tr>
</thead>
<tbody>
<tr>
<td>monograph</td>
<td>6</td>
</tr>
<tr>
<td>Textbook</td>
<td>8</td>
</tr>
<tr>
<td>editorial for foreign monograph</td>
<td>12</td>
</tr>
</tbody>
</table>

The monitoring and searching for appropriate publication spaces for doctoral candidates is one of the priority tasks of information management of supportive departments of the Faculty (Academic Library, Publishing House) to support the publication of results achieved by scientific research. Of course, by creating a domestic space, the opportunity for the transfer of these results (does not reach the top international quality) is provided, but the aim is particularly to find a reputable foreign space for scientific publication outputs. This activity is consistent with the conceptual plan for the development of the Faculty. The benefits of the economic value can be measured or estimated only by a relatively complex system. There can be expected a quantifiable increase in income subsidy from achieving the publication outputs in top international quality, the increase in grant success, the enlarged interest of students in postgraduate study based on the selection criteria in their decision of the curricular field. On the other hand, there are benefits characterised by:
- new foreign publications space for STU MTF in renowned foreign publishers,
- strengthening of the category "top international quality",
- possible co-authorship with foreign partners and the possibility of comparative scientific works,
- the possibility of an increased proportion of citations of authors from STU MTF.

SOCIAL PROGRAMMES FOR EMPLOYEES OF THE FACULTY OF MATERIALS SCIENCE AND TECHNOLOGY

STU MTF creates the following conditions of social policy for employees according to their rights defined in legislation. The management of STU MTF is interested in employee opinions. Every year a survey is prepared to obtain feedback as a tool to decide about future changes. The Faculty management discusses the results of the survey (which are available for the public) and new measures are introduced on the basis of the satisfaction survey.

Events financed from the social fund:
- Concert for STU MTF employees at the pre-Christmas Party,
- Theatre performance at the Day of STU MTF event,
- Pre-Christmas party for children of the STU MTF employees.

EMPLOYEE BOARD OF STU MTF

The employee board of STU MTF was established at the Faculty after elections in June 2009 for the period of four years. It represents the interests of all employees in accordance with valid labour codes and the collective labour agreement. The representatives on the employee board of STU MTF took part in all meetings of the Faculty management, the collegium of the dean, in meetings of UOO STU in Bratislava and in job interviews for pedagogical positions during the year. The board participated in the schedule creation for the use of the gymnasium and swimming pool with employees of STU MTF and the preparation of the canteen menu; it took part as well in a petition organised with the union of employees of the school system and research in connection with creation of new labour codes.

The employee board of STU MTF:
- discussed all materials dealing with holiday planning, collective holidays, a directive of the dean regarding the application for social fund resources and others,
- discussed all applications for prolonging employment, termination of working relationships because of redundancy after the implementation of the automatic call centre,
- approved grants from the social fund in agreement with the union contract of the year 2014,
- participated in the evaluation of adherence to the collective labour agreement terms as well as preparation of a new collective labour agreement for 2014 in the form of comments to a draft and completion of the draft,
- the submission of ideas of Faculty employees for solving problems on particular panels.

SECURITY SYSTEM

Status in the area of work accident risks, illnesses caused by work, dangerous events and dangerous industrial accidents:

Status of working conditions (following the rules):
- creation of a new directive by the Dean No. 8/2008 on “Work and workplaces which are forbidden to pregnant women and mothers to the end of the ninth month after giving birth, and breastfeeding women”,
- the categorisation of work from the perspective of health risks.

Personnel and protection of working appliances:
- the list of working activities,
- the report on the state of technical equipment and control, revision and repair.

Areas for the training of Work Safety and Health Protection of employees and the creation of rules:
- admission training – 99 employees,
- periodical training of employees – 239 employees,
- training of management – 21 employees,
- induction information for students during the enrolment process – 1482,
- training of employees to provide first aid – 20 employees.
On 19/3/2011 the civil association, the Bank of Quality – Alumni STU MTF was established. This association creates space and conditions for Faculty communication with former graduates.

Activities of Alumni
Meeting of the general assembly of the association
English translation of the association website
Electronic journal Alumni Magazine of the association established
Newsletter sent to the registered members of the association

Alumni Related Activities in 2014:
General Assembly of the Alumni members took place on 18/12/2014
New Alumni Charter admitted on 18/12/2014
Changes in the Alumni Management (Alumni Chair since 01/12/2014 – Prof. Ing. Milan Marônek, PhD., Vice-dean for Internal and International Relations)
Updates to the Alumni portal
Newsletter in Slovak language – 41 pieces, in English language – 19 pieces
Alumni magazine – issued once a year – 1-03/2014
Publicising job openings on the Alumni portal (year 2014: 37)
Promotion of the Faculty graduates and monitoring their performance on the job market (in Slovak and English languages)
Promotion of prepared events, updating, preparing photo-galleries
Designing web pages and new navigation elements, and their regular update
Administering the mail of the Bank of Quality – assistance in the graduates’ registration, entering data into the Alumni database
Production and distribution of the membership passports
Sending information mails regarding the Faculty events to all registered members
Designing and printing the information Alumni leaflets for the graduating students

Visits to the Alumni portal (01/01/2014 – 15/12/2014): **8533**

Number of alumni registered in the Bank of Quality – Alumni of STU MTF by 11/12/2014: **582**

Account number of the Alumni association: **2957128851/0200**
IBAN: SK27 0200 0000 0029 5712 8851

By making a contribution to this account number, you can support the activity of the “Civic Association of Graduates and Friends of STU MTF, Bank of Quality – Alumni STU MTF.”

This part of Annual Report 2014 was verified by doc. Ing. Helena Makyšová, PhD. and Prof. Ing. Milan Marônek, PhD.
INSTITUTE OF MATERIALS SCIENCE

CONTACT

Director: prof. Ing. Jozef Janovec, DrSc.
e-mail: jozef.janovec@stuba.sk
tel.: +421918646072

New management of Institute since 01/12/2014

Director: Prof. Ing. Lubomír Čaplovič, PhD.
e-mail: lubomir.caplovic@stuba.sk
tel.: +421918646043

Address: Jána Bottu 25, 917 24 Trnava, Slovak Republic
tel.: +421918646038
fax: +421906068499

STAFF

- Professors: 7
- Assoc. Professors: 11
- Senior Lecturers: 14
- Research Fellows: 7
- PhD Students: 28

EDUCATION AT THE INSTITUTE

Number of students (as on 31/10/2014) registered on study programmes offered by the Institute: 165
Number of students graduated (in the academic year 2013/2014) from the study programmes offered by the Institute: 50

STUDY PROGRAMMES

- Materials Engineering
- Processing and Application of Non-Metals
- Production Quality
- Engineering of Production Quality
ACTIVITIES OF THE INSTITUTE

Date | Title of event or activity at the Institute in 2014
--- | ---
21/01 – 24/01/2014 | Course of Physics for MTF students
29/01/2014 | Participation in the Open Day – presentations and sight-seeing tours of the laboratories
03/02 – 04/02/2014 | Participation in the STU MTF Doctoral Day
20/05 – 23/05/2015 | Presentation of CE Aprodimet in MSV, Nitra
11/09 – 12/09/2015 | Participation in the Summer University of Secondary-school Students – lecture and experimental exercise in Microscopy
05/12/2014 | Mgr. Marián Palcut, PhD., awarded the title “Young researcher” by the STU Rector

GRADUATE PROFILE

BACHELOR’S PROGRAMME (Bc.)

Materials Engineering

quality management systems. He will master the subject matter of international standards for quality management and intellectual property. The graduate will have a deep knowledge of natural sciences and specific areas of plant management, particularly in designing maintaining, implementing and improving quality management systems, total quality management /TQM/ approaches, as well as modern tools and methods of quality management. The graduate is able to develop and implement quality management systems. The graduate may be employed in several areas: industrial companies, services, state administration and at all positions where synergy of management, technical knowledge and skills is needed.

POSTGRADUATE PROGRAMMES (PhD.)

Materials Engineering

The graduate from the programme will have gained a complete Bachelor’s degree education in the field of Materials focused on the main kinds of technical materials. The graduate will understand production, testing, technological processing, selection, exploitation and degradation of properties of main kinds of technical materials. Upon completion of the degree the graduate will have developed knowledge of the notions, principles and theory regarding technical materials, production technology, processing technology, application and recycling of materials, as well as fundamentals of electrical engineering, construction, informatics and management of industrial company. Furthermore, they will be able to specify mechanical properties of materials and work with equipment used in mechanical and defectoscopic tests of materials, evaluate the structure of materials by standard procedures with the use of corresponding equipment machinery. The graduate will be conscious of the social, moral, legal and economic impact of his or her chosen profession and will be prepared either for master’s study in the field of Materials and related study fields or for entering the job market immediately. The qualification will equip the graduate with the skills to successfully operate in industrial companies in the field of technical materials, technological processing of semi-products and products, as well as in the fields of quality control, purchasing and selling materials, service and maintenance.

MASTER’S PROGRAMMES (Ing.)

Materials Engineering

The graduate will gain a complete Master’s degree education in the field of Materials focused on technical materials. The education combines the science of Chemistry, Physics, and Mathematics with the principles of mechanical, chemical, and electrical engineering; the materials scientist combines ingredients with atomic specificity and precision in order to yield a spectacular product. The graduate will understand the development and production of technical materials, the technological processing of semi-products and products, as well as quality control and operating diagnostics, connections within chemical composition, structure and the technically important properties of materials. Furthermore, the graduate will develop his/her knowledge of production, processing, quality control, application and recycling of materials, methods, techniques and means of property analysis, selection and implementation of materials. The graduate will also be able to specify and propose extensive material solutions across a wide range of technical fields, apply a wide spectrum of experimental methods of study and properties of materials in solving tasks in engineering practice. Through the analysis and understanding of technological and other processes in terms of their impact on structure and properties of materials, they will be able to gauge the influence of production and processing technologies on the working environment and recommend alternative solutions. The graduate will be conscious of the social, moral, legal and economic impacts of the profession and will be prepared either to continue studying at post-graduate degree level, to gain a scientific perspective across a whole range of materials engineering fields, or to enter the job market immediately. Graduates from the Master’s programme will be equipped with the skills to successfully perform as a team leader or a team member in the field of materials engineering (research, development, production or implementation), individually as a project leader, an entrepreneur or a manager in industrial production.

Processing and Application of Non-metals

The graduate will gain a complete university education in the study field of Materials with specialisation in non-metallic materials. The graduate will understand the production, technical treatment, testing, exploitation and degradation of non-metallic materials such as plastic, ceramics, glass, rubber and some special kinds of materials, in addition to the correlations between structure and properties of the mentioned materials, as well as control of their quality and processes of diagnosis. The graduate will develop his/her knowledge of production, treatment, quality control, application, recycling and secondary treatment of the mentioned materials, in addition to methods, technologies and appliances of properties analysis, selection and application of non-metallic materials. Graduates from the programme can then go on to work as a manager or team member (research, development, production or application of non-metallic materials), independently as a project manager, a manager of his or her own company or as a manager in industrial production with this specialisation.

POSTGRADUATE PROGRAMMES (PhD.)

Materials Engineering

The graduate will master the rules of scientific work in the field of Materials and will obtain a doctoral degree education in the field of Materials. The graduate will be prepared to discover and propose his or her own solutions to problems, learn to formulate problems scientifically and present his or her own results. They will be equipped with the skills to gauge legal and environmental aspects, ethical and social aspects of scientific work and will become familiar with scientific methods of research and development as well as processes leading to his or her problem solving in the field of technical materials. The graduate will master the rules of individual
and team scientific work, scientific formulation of problems, ethical and social aspects of scientific work and the effective presentation of research results. In doing so, they will understand the relationships between research, development, production, implementation and recycling, aspects of research and development of new materials and legal and environmental aspects of new products. Upon completion of the study programme, the graduate will be conscious of the social, moral, legal and economic impacts of his or her profession and will be prepared to gain a further scientific perspective across a wide range of material research fields, in order to widen his or her own knowledge in the field, or to enter the job market immediately. The graduate will successfully perform as a researcher in research institutes, at universities or a highly-qualified specialist in large industrial companies typically focused on the production of materials or technological processing of materials for semi-products and products.

**Processing and Application of Non-metals**

The graduate will develop knowledge of the principles of scientific individual and team work as well as the procedures leading to individual problem solving in the field of non-metallic materials. The graduate will then be ready to discover and bring new independent solutions to problems, scientifically formulate the problem and present his or her own results and will be able to assess the legal and environmental aspects, and ethical and social aspects of scientific work. The graduate understands the connections between research, development, production, use, recycling and aspects of research and development of new materials (especially based on glass, plastics and ceramics). The graduate may work as a scientific/research worker in research institutes, at universities or in large industrial enterprises focused on the production of materials or technological processing of materials into semi-finished products and products.

**LIST OF SUBJECTS OFFERED BY THE INSTITUTE**

Advanced Materials and Technologies
Bachelor’s Project
Bachelor’s Thesis
Degradation Processes and Prediction of Lifetime
Graduation Project
Diploma Thesis
Dissertation Project I-II
Electrotechnics and Electronics
Experimental Methods of Materials Investigation I-II
Heat Treatment of Materials
Heat Treatment Technology
Chemical Heat Treatment
Materials in Power Engineering
Materials Science I-II
Mechanical Testing and Defectoscopy Of Materials
Methods in Research of Material Structure And Properties
Methods of Materials Investigation
Metrology and Testing Of Plastics
Modelling of Phase Equilibria
Non-Metallic Materials
Pedagogic Activities I-ll
Physical Measurement Methods of Non-metallic Materials

**LIST OF GRADUATE THESIS**

List of theses contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

**Master’s Theses**

Gondek, J.: Analysis of Zn-based coating alloys
Demeter, J.: Analysis of surface tension and microstructure of lead-free solders based SAC
Škrobáková, I. S.: Application of differential scanning calorimetry in investigation of plastics and complex metal alloys
Suchá, B.: Structure analysis of SBR/NR rubber and its vulcanize
Bilícký, M.: Quality Diagnostics preparation of composite materials with higher electrical conductivity
Nemcová, M.: Electrical and Dielectric Properties Glasses System Sb2O3 - TeO2 - PbCl2
Kocian, T.: Assessment methods of anticorrosion efficiency selected coatings systems
Lažšek, L.: Modelling of thermodynamics properties and phase equilibrium in selected plastics and complex metallic alloys
Csémi, M.: Ultimate tensile strength of soldered joints produced by lead-free solders with cerium addition
Komariánský, M.: Melts rheology of selected thermoplastic
Polakovič, F.: Determination of critical parameters extrusion of low weight pipes from polyolefins and polyvinylchloride
Babinec, M.: Study of AISI 304L and ARMCO steel interactions with ZnSn melt
Múčka, R.: Study of corrosion resistance of high alloyed Cr-Mn-N austenitic steels after isothermal exposure
Sabová, D.: Study of the fracture surface and impact test of cooled Sn60MC steel samples
Maslákovič, M.: Study of stamps microstructure made by rapid solidification from aluminium melt base
Pančíková, E.: The study of structural inhomogeneities of high-temperature superconductor tapes by means of scanning electron microscopy
Kuracina, V.: Heat treatment of Cr – V ledeburitic tool steel with sub-zero processing
Toth, L.: Properties and structural stability of rapidly solidified complex metallic aluminum-based materials
Šuryová, N.: Properties of tool steels to 190 after subjected to boriding
Borko, P.: Effect of high-temperature exposure on the microstructure Cr-Ni austenitic stainless steel
Trnavská, A.: The influence of increased content of copper on the unleaded solders characteristics
Pančíková, M.: Identification of the plastics using infrared spectrometry
Kollárková, A.: Development of metal matrix composite materials strengthened by rock particles for well casing stability enhancement

Borko, P.: Degradation of superconductor structure after application of tensile stress

PhD Theses
Švántner, Tomáš: Al-AlN composites prepared by in-situ nitridation of aluminium powders
Konopka, Pavol: Characterization of defects in the structure of non-metallic superconductors
Seliga, Emil: The degradation behavior of vulcanizates of rubber compounds monitored by physical methods
Duehring, Steven: Experimental-numerical method of the failure prediction by the heat treatment of steels
Kocsisová, Edina: Study of grain boundary structure influence of secondary phase’s precipitation in austenitic stainless steels
Grýa, Dušan: Influence of thermal aging on the safety significant components in nuclear power plants WWER 440

RESEARCH AT THE INSTITUTE

Areas of Research
- advanced complex metallic alloys and other structurally complex materials,
- alloy steels for energy industries,
- lead-free solders,
- materials with non-crystalline structures,
- computational chemistry in materials science,
- thermodynamic modelling of phase equilibria and processes in materials,
- coatings and surface treatment,
- superconducting materials.

Research characteristics
The research activities of the Institute of Materials Science are focused on crystallisation and heat treatment of metals and alloys, tool materials, powder metallurgy, stainless steels, steels for power plants, weldability of steels, lead-free solders, wear-resistant coatings, complex metallic alloys, processing of polymers and properties of special glasses and properties of high-temperature superconducting tapes. At present, the Institute possesses three internal laboratories (Laboratory of Structural Analysis, Laboratory of Heat Treatment and Mechanical Testing, Laboratory of Physical-Chemical Measurements and Processes) and three laboratories with external partners (Laboratory of Thermophysical Measurements and Calculations, Laboratory of Soldering, Laboratory for Development and Research of Advanced Metallic Materials and Composites). During the last few years, many modern devices were obtained as part of investment in the "Centre for development" and the application of advanced diagnostic methods in the processing of metallic and non-metallic materials. Equipment acquired includes a high-resolution scanning electron microscope; JEOI 7600F equipped with EDS, WDS and EBSD detectors, a confocal laser scanning microscope; ZEISS LSM 700, a universal testing machine for evaluation of mechanical properties of materials; LabTest 4.2S0SP1-WM, a Charpy impact tester; CHIOO01-I, a simultaneous thermal analyser; NETZSCH 409 CD, a high-temperature dilatometer; NETZSCH 402 C, a laser flash analyser; NETZSCH LFA 427, a temperature stimulated depolarisation; CONCEPT 90 with Quatro Cryosystem, a spectral analyser; Solartron 1260, a rotation viscosimeter; Gemini II and vulcanisation measurement equipment; D-MDR 3000. The furnace for chemical heat treatment; CHTZ 15, and the PVD coating unit; PLATIT, were installed in the laboratories of the Institute. New software was also obtained related to modeling properties of materials subjected to thermal and mechanical treatment which has greatly enhanced the computational facilities of optimising the processing parameters (Sysweld, DEFORM, JmatPro).

In the areas of research and education, the Institute has established intensive cooperation with local and foreign institutes, including, Leibniz Institute of Solid State and Materials Research in Dresden (Germany), Institute João Stefan, Ljubljana (Slovenia), Vienna University of Technology (Austria), Research Centre Dresden-Rossendorf (Germany), Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno (Czech Republic), Faculty of Mechanical Engineering, University of Ljubljana (Slovenia) and other Slovak universities and institutes of the Slovak Academy of Sciences. From the list of industrial partners the most recognised are Bekaert SA (Belgium), Böhler – Edelstahl, Branson div. Emerson, and Benteler (Germany). The Institute has a long established tradition of cooperation with regional industrial partners.

Areas of expertise
- Material Degradation and Accidents
- Laboratory Technology for Material Diagnostics
- Structure Analysis
- Thermal Analysis
- Microscopy and Diffraction Analysis
- Spectroscopy Analysis
- Space Phenomena
- Advanced Materials
- Fusion and Fusion Reactors
- Lead-free Solders
- Materials for Energetics
- Corrosion Processes
- Coatings for Tool Steels
- Heat Treatment of Materials

PROJECTS OF THE INSTITUTE

Project Title: A study into the metallurgy nature of the structure and property changes of Cr-V ledeburitic steel by sub-zero treatment
Coordinator: Prof. Ing. Peter Jurič, PhD.
Start Date: 01/01/2014
End Date: 31/12/2016
Programme: VEGA
Annotation: The project is focused on the study of the phenomena taking place in the selected chromium-vanadium ledeburitic tool steel during sub-zero treatment and various regimes of such treatment. The research will determine the effect of the key process variables such as tempering and holding on the temperature of sub-zero treatment on the microstructure, hardness, toughness in 3-point bending, fracture toughness and wear-resistance. The project will use a wide range of experimental techniques, which will enable attainment of the main goal of the project: a detailed and complex analysis of the phenomena in the microstructure of selected Cr-V ledeburitic steel in the conditions of sub-zero treatment under various regimes, and determination of the effect of microstructure changes taking place during sub-zero treatment on the mechanical and tribological properties of the material.
<table>
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<tr>
<th>Project Title</th>
<th>Coordinator</th>
<th>Start Date</th>
<th>End Date</th>
<th>Programme</th>
<th>Annotation</th>
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<tbody>
<tr>
<td>Using complex thermoanalysis and computer thermodynamics in the study of processes in advanced material systems.</td>
<td>doc. Ing. Roman Čička, PhD.</td>
<td>01/01/2014</td>
<td>31/12/2017</td>
<td>VEGA</td>
<td>The project is focused on utilising the experimental and computer thermodynamics in the study of processes and phase equilibria in perspective material systems such as complex metal alloys, advanced tool steels, corrosion-resistant austenitic steel, Al-based hardenable alloys and lead-free solders. In the experimental part, a complex thermoanalysis of the examined systems along with the measurements of some important thermo-physical quantities and a structure analysis will be carried out. Thermo-Calc, JMatPro, Dictra, ANSYS, SYSWELD, DEFORM and MATLAB programmes will be used to calculate the model phase equilibria and processes taking place in the examined materials during the controlled temperature regime. The project objective is to improve the prediction ability of phase equilibria and the processes in material systems by using advanced methods of computer thermodynamics.</td>
</tr>
<tr>
<td>Corrosion resistance of advanced metal alloys on the basis of zinc, aluminium and tin</td>
<td>Mgr. Marián Palcut, PhD.</td>
<td>01/01/2014</td>
<td>31/12/2017</td>
<td>VEGA</td>
<td>The aim of the project is the study of the corrosion resistance of phases in the Zn, Al and Sn-based alloys. The studied materials can be used as light construction materials for the automobile and aviation industries, protective coatings of steels and lead-free solders for microelectronics. The alloys will be prepared by melting pure metals in the protective atmosphere or under the layer of flux. Corrosion resistance will be studied in water solutions of electrolytes. Simultaneously, corrosion resistance will be examined by an accelerated test in a fog chamber. Selected samples will be subjected to mechanical tests for their susceptibility to corrosion cracking under stress. Corrosion products will be examined by a combination of methods of X-ray diffraction, energy-disperse spectroscopy, transmission electron microscopy and reflective infrared spectroscopy. High-temperature corrosion resistance of selected samples will be also investigated. The contribution of the project will be the identification of corrosion-resistant alloys for practical applications.</td>
</tr>
<tr>
<td>A Centre of Excellence for functionalised multiphase materials (FUNMAT)</td>
<td>prof. Ing. Jozef Janovec, DrSc.</td>
<td>04/08/2011</td>
<td>31/12/2014</td>
<td>Other domestic</td>
<td>The aim of the project is to gain new physics knowledge in the field of multiphase complex alloys, ceramics, composites and catalytically active surfaces of metals, plasmonic effects, photovoltaic and thermoelastic polymer structures, as well as from the field of biosensors. The acquired knowledge enables targeted functionalisation of materials with the goal to achieve the required specific properties such as mechanical toughness, chemical selectivity, increased quantum efficiency of light conversion and others. The final aim is a marked added value in research, the development and the implementation of unique high-tech solutions based on a multidisciplinary approach and the connection of research subjects with expertise in the field of physics of solids, quantum optics, materials engineering, inorganic chemistry, chemistry of polymers and biology.</td>
</tr>
<tr>
<td>Interactions in bio and nanosystems</td>
<td>prof. RNDr. Miroslav Urban, DrSc.</td>
<td>01/05/2011</td>
<td>31/10/2014</td>
<td>APVV, General Call</td>
<td>The bonding characteristics, including chemical and hydrogen bonds to weak intermolecular interactions are essential in apparently remote areas like biophysics and material sciences. Recently, benchmarking data was obtained for properties of molecules and their interactions, using the Coupled Cluster CCSD (T) method capable of recovering a substantial part of the electron correlation. It provides reliable predictions of molecular properties. Innovations developed within the project remit allow CC molecular calculations with more than 80 correlated electrons and basis sets with up to 1500 functions. Real applications require properties of large molecules and clusters, inaccessible to rigorous methods. As a result, computationally less demanding DFT and semi-empirical methods will be used. The accuracy control of appropriate methods using relativistic CC data for smaller model systems is essential in this project. Intramolecular interactions will be exploited “in silico” drug design, “docking and scoring” analysis and the description of the ligandactive site of the protein. The activity of “Aurora” kinase inhibitions in tumour cells, molecules with angiostatic activity, blocking the vascular endothelial growth factor receptor2 will be investigated. Reference data for metal ligand interactions related to the SAMS formation and catalysis on surfaces and cavities will be obtained. A model will be proposed as part of the research findings in order to summarise the application of Aunanoparticles in relation to material sciences and drug design. Polymer interactions based on HCNB clusters will also be studied.</td>
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| Solidification and properties of novel peritectic TiAl-based alloys           | Ing. Svetozár Demian                                                        | 01/05/2011   | 31/10/2014 | APVV, General Call | Peritectic alloys based on TiAl are excellent candidates for near net shape casting of lightweight structural components for aircraft and automotive engines, industrial gas turbines and new generation of nuclear reactors. To advance the knowledge in the emerging casting technology sector of TiAl-based alloys, the SOPERIT project aims to investigate microstructure formation and segregation during solidification and solid phase transformations of novel peritectic TiAl-based alloys. The attention is directed to understand the effect of solidification parameters and alloying on the primary solidification phase, solidification path, phase equilibria, the columnar-equiaxed transition (CET, texture formation and nucleation activity of peritectic phase which will open up new opportunities for alloy and process design. The novel peritectic alloys with a fine grain structure will be designed and their microstructure and properties (chemical, physical and mechanical) will be characterised. Fine grain structure will be achieved through appropriate alloying affecting nucleation of peritectic phase and solid phase transformations. Unique CET experiments will provide advanced knowledge about the mechanisms of nucleation of equiaxed grains, associated segregation and the necessary input data for CET modelling. Parallel to these research activities, laboratory near net shape casting techniques based on plasma melting in a water-cooled
<table>
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<th>Project Title</th>
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<th>Start Date</th>
<th>End Date</th>
<th>Programme</th>
<th>Annotation</th>
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<tr>
<td>Research and development of advanced materials, processing and automation technologies for direct manufacturing and application</td>
<td>doc. Ing. Martin Kusý, PhD.</td>
<td>01/09/2011</td>
<td>31/08/2014</td>
<td>VEGA</td>
<td>Other international. The subject of the research is focused on advanced materials, processing and automation technologies for direct manufacturing and its application.</td>
</tr>
<tr>
<td>The structure, properties and processes at surfaces and interfaces of materials from first principles calculations</td>
<td>RNDr. Andrej Antušek, PhD.</td>
<td>01/01/2012</td>
<td>31/12/2015</td>
<td>VEGA</td>
<td>The project is focused on density functional calculations of surface and interface structures relevant for materials science and chemistry. Through the application of methods of theoretical and computational chemistry, the research will address the growth of a thin layer and the subsequent thermodynamic properties of such structures with possible applications in brazing and joining technology. Using our previous experience with intermolecular interactions, the research will model interactions of molecules with surfaces, with a focus on increasing the understanding of the bonding mechanism. For smaller model systems accurate relativistic CCSD(T) calculations will be used as benchmarks to verify DFT results. Wave function calculations may also be useful for the selection of a proper DFT functional.</td>
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<tr>
<td>A study into the structural and mechanical stability of a new extremely hard coating for the construction and tool materials</td>
<td>Prof. Ing. Josef Janove, DrSc.</td>
<td>01/07/2012</td>
<td>31/12/2015</td>
<td>APVV, General Call</td>
<td>The project is focused on studying the phases, their equilibria, and transformations due to changes in temperature and chemical composition in aluminium base and zinc base complex metallic alloys, as well as on the determination of their crystal structure. This study will be carried out using experimental (X-ray diffraction, DTA, DSC, TEM, electron diffraction, SEM, EDX, WDX, and EBSD) and theoretical (CALPHAD, DFT and empirical potentials) tools. Selection of alloys will be focused on systems where one component is either aluminium or zinc, and the remaining components are formed by transition metals. The project may significantly contribute to the development and clarification of phase diagrams in areas that are less well-known and poorly studied. The emphasis will be placed on areas where structurally complex and quasicrystalline phases could be supposed. The contribution to finding of new quasicrystalline and structurally complex phases is anticipated. Theoretical study of these phases will lead to a more detailed description of their crystal structure, as well as to a deeper understanding of the relationship between the structure and physical properties.</td>
</tr>
<tr>
<td>A study of crystal structure and thermodynamic properties of aluminium base and zinc base complex metallic alloys</td>
<td>prof. Ing. Lubomír Čaplovič, PhD.</td>
<td>01/01/2012</td>
<td>VEGA</td>
<td></td>
<td>The project is focused on the study of phases, their equilibria, and transformations due to changes in temperature and chemical composition in aluminium base and zinc base complex metallic alloys, as well as on the determination of their crystal structure. This study will be carried out using experimental (X-ray diffraction, DTA, DSC, TEM, electron diffraction, SEM, EDX, WDX, and EBSD) and theoretical (CALPHAD, DFT and empirical potentials) tools. Selection of alloys will be focused on systems where one component is either aluminium or zinc, and the remaining components are formed by transition metals. The project may significantly contribute to the development and clarification of phase diagrams in areas that are less well-known and poorly studied. The emphasis will be placed on areas where structurally complex and quasicrystalline phases could be supposed. The contribution to finding of new quasicrystalline and structurally complex phases is anticipated. Theoretical study of these phases will lead to a more detailed description of their crystal structure, as well as to a deeper understanding of the relationship between the structure and physical properties.</td>
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<tr>
<td>The effects of inhomogeneities on the functional properties of hightemperature superconducting wires</td>
<td>Mgr. Michal Skarba, PhD.</td>
<td>01/01/2011</td>
<td>31/12/2015</td>
<td>VEGA</td>
<td>Nonmetallic superconductors based on a mixture of Y, Ba and Cu oxides (YBCO) are well known materials showing superconductive properties at relatively high temperatures. Structural analysis of micrometer superconducting layers on metallic substrate enables an understanding of the relationship between the parameters of preparation of layer and its properties. During deposition of layer on metallic substrate and during further processing, defects in the structure of thin layers of YBCO develop. These defects significantly affect the electromagnetic properties of superconductors, especially critical current and ac losses. Information about defects in layers of YBCO, inferred from structural analysis, is useful to decrease imperfections during the production of superconducting layers. It is also necessary for the development of superconducting devices, because they can have a significant influence on their working characteristics. Evaluations of structure of thin superconductive layers will be performed mainly with (highresolution) TEM.</td>
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<tr>
<td>Study of relaxation mechanisms in composites with special carbon-based filling</td>
<td>doc. Ing. Marian Kubliha, PhD.</td>
<td>01/01/2013</td>
<td>31/12/2015</td>
<td>VEGA</td>
<td>The project is aimed at the implementation of measurements of selected physical parameters in the study of composites with polymeric matrix with an emphasis on the investigation of relaxation mechanisms in the structure. In the case of the matrix formed from reactoplast, the project is oriented on the evaluation of the impact of nanoparticles and carbon fibres (content and the arrangement of the individual phases) on mech-</td>
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Chemical sputtering: Computational modelling of interactions in the carboncontaining films exposed to molecular ions and hydrogen EURATOM CU

Project Title
The Influence of exposure conditions on the evolution of binary and ternary phases in aluminiumbased complex metallic alloys

Coordinator
prof. RNDr. Miroslav Urban, DrSc.

Start Date
01/01/2010

End Date
31/12/2014

Programme
VEGA

Annotation
The evolution of binary and ternary phases under thermal activation in Al-based CMAs will be studied with the intention to make the concerned phase diagrams more precise. The AITMTM (TM=transition metal) alloys will be annealed for longterms at various temperatures and then quenched to fix the microstructure at annealing temperature. To analyse the phases, XRD, TEM, SEM, DTA, EDX, WDX, and EBSD, thermodynamic simulations will be used. Attention will be paid to the systems investigated insufficiently until now. Based on the experimental results and the available theoretical knowledge, precise thermodynamic parameters will be determined for the identified phases and the related databases will be modified. The use of advanced experimental methods gives rise to methodological innovations. The project is expected to contribute to the basic knowledge and perhaps to the discovery of new phases exhibiting original properties.

The formation of small hydrocarbons, their chemistry and cracking pattern upon the electron (e) impact and/or the thermodynamics of the formation of saturated lower hydrocarbons. Interaction energies of the hydrogen, nitrogen and molecular ions with compounds representing and modulating interactions with hydrogenated carbon films. Calculations of ionisation potentials of small hydrocarbons, CxHy (C,H,D) and their ions, their properties and thermodynamic stability.

VISIT OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

<table>
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<tr>
<th>Country</th>
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<tr>
<td>Belgium</td>
<td>Skarba Michal, Mgr., PhD.</td>
<td>Japan</td>
<td>Dobrotka Andrej, Mgr., PhD.</td>
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<tr>
<td>Czech Republic</td>
<td>Bošák Ondrej, Mgr., PhD.</td>
<td>Hungary</td>
<td>Antušek Andrej, RNDr., PhD.</td>
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<td>Čaplovič Lubomír, prof. Ing., PhD.</td>
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<td>Holka Filip, Mgr., PhD.</td>
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<td>Drienovský Marián, Ing., PhD.</td>
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<td>Šulková Katarína, RNDr., PhD.</td>
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<td>Hudáková Mária, doc. Ing., PhD.</td>
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<td>Urban Miroslav, prof.RNDr., DrSc.</td>
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<td>Jurčič Peter, prof. Ing., PhD.</td>
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<td>Kusý Martin, doc. Ing., PhD.</td>
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<td>Laháš Vladimír, doc. RNDr., PhD.</td>
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<td>Palcut Marián, Mgr., PhD.</td>
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<td>Pekarčíková Marcela, Dr.- Ing.</td>
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<td>Pětěryová Magda, Mgr.</td>
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<td>Sahul Martin, Ing., PhD.</td>
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<td>Chile</td>
<td>Urban Miroslav, prof. RNDr., DrSc.</td>
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<td>France</td>
<td>Čaplovič Lubomír, prof. Ing., PhD.</td>
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<td>Urban Miroslav, prof. RNDr., DrSc.</td>
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<td>Croatia</td>
<td>Černíková Ivona, Ing., PhD.</td>
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<td>Pripušť Pavol, RNDr., PhD.</td>
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<td>Austria</td>
<td>Pekarčíková Marcela, Dr.- Ing.</td>
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<td></td>
<td>Skarba Michal, Mgr., PhD.</td>
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</table>

Anisms of dielectric behaviour. In the case of the matrix based on elastomers, the critical processes are examined in the formation of rubber mixture vulcanisers, as well as in their thermomechanical degradation. Correlations between the composition of the investigated system and the values of the rheological, electrical, dielectric quantities at nonisothermal heating of rubber mixtures are described. Important characteristics such as the resistance to thermomechanical exposure and the reproducibility of the properties defined by the values of the physical properties are discussed, too.
<table>
<thead>
<tr>
<th>Country</th>
<th>Employee</th>
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<tbody>
<tr>
<td>Russia</td>
<td>Sahul Martin, Ing., PhD.</td>
</tr>
<tr>
<td>USA</td>
<td>Sahul Martin, Ing., PhD. Lokaj Jan, prof. Ing. CSc.,</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Antušek Andrej, RNDr., PhD.</td>
</tr>
<tr>
<td>Italy</td>
<td>Urban Miroslav, prof. RNDr., DrSc.</td>
</tr>
</tbody>
</table>

**MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS**

- **Union of Slovak Mathematicians and Physicists**
  - Mgr. Ondrej Boták, PhD.
  - doc. Ing. Marián Kubliha, PhD.
  - Mgr. Ondrej Dobrotka, PhD.
  - prof. RNDr. Milan Žobold, PhD.
  - Ing. Róbert Riedlmaier, PhD.
  - Ing. Roman Čička, PhD.
  - RNDr. Igor Jančúška, PhD.
  - Mgr. Jozef Krajkovít, PhD.
  - doc. RNDr. Vladimír Labaš, PhD.
  - doc. Ing. Stanislav Minárík, PhD.
  - RNDr. Pavol Priputen, PhD.
  - Ing. Lýdia Rízeková Trnková, PhD.

- **Slovak Physical Society**
  - prof. RNDr. Miroslav Urban, DrSc.

- **Slovak Chemical Society**
  - prof. RNDr. Miroslav Urban, DrSc.

- **Slovak Academy of Sciences / Metal Science Society**
  - prof. Ing. Jozef Janovec, DrSc.
  - doc. Ing. Lubomír Čaplovič, PhD.
  - Ing. Lýdia Rízeková Trnková, PhD.
  - doc. Ing. Maria Hudáková, PhD.
  - Ing. Viktória Sedlická, PhD.

- **Information Society of Education**
  - Mgr. Jozef Krajovič, PhD.

**MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS**

- **Minerals, Metals and Materials Society**
  - Mgr. Jozef Janovec, DrSc.

- **IUCr International Union of Crystallography**
  - doc. Ing. Lubomír Čaplovič, PhD.
  - prof. Ing. Jozef Janovec, DrSc.

- **ASM International – American Society for Metals**
  - doc. Ing. Lubomír Čaplovič, PhD.

- **European Physical Society**
  - doc. Ing. Róbert Riedlmaier, PhD.
  - doc. Ing. Marián Kubliha, PhD.
  - Mgr. Ondrej Boták, PhD.
  - Ing. Roman Čička, PhD.

- **Czech and Slovak Crystallographic Association**
  - doc. Ing. Martin Kusý, PhD.
  - doc. Ing. Lubomír Čaplovič, PhD.

- **Czech Society for New Materials and Technologies**
  - prof. Ing. Peter Jurčí, PhD.

- **Regional Committee of the IUCr**
  - doc. Ing. Lubomír Čaplovič, PhD.

- **CVC Integral Working Group**
  - Mgr. Andrej Dobrotka, PhD.

- **Association for the Heat Treatment of Metals**
  - prof. Ing. Peter Grgaž, PhD.
  - prof. Ing. Peter Jurčí, PhD.

- **European Powder Metallurgy Association**
  - prof. Ing. Peter Jurčí, PhD.

- **North-Atlantic Consortium on Non-Oxide Glasses (NACNOG)**
  - doc. Ing. Stanislav Minárík, PhD.
  - doc. Ing. Marián Kubliha, PhD.
  - doc. RNDr. Vladimír Labaš, PhD.

- **Norwegian Chemical Society**
  - Mgr. Marián Palcut, PhD.

- **Union of Czech Mathematicians and Physicists**
  - Mgr. Jozef Krajkovít, PhD.

- **International Society for Theoretical Chemical Physics**
  - prof. RNDr. Miroslav Urban, DrSc.

- **World Association of Theoretical and Computational Chemists**
  - prof. RNDr. Miroslav Urban, DrSc.

- **International Academy of Quantum Molecular Science**
  - prof. RNDr. Miroslav Urban, DrSc.

- **International Astronomical Union**
  - Mgr. Andrej Dobrotka, PhD.

- **Swift Nova-CV Group**
  - Mgr. Andrej Dobrotka, PhD.
List of publications contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.


INSTITUTE OF PRODUCTION TECHNOLOGIES

CONTACT

New management of the Institute since 01/12/2014

Director: Prof. Ing. Peter Šugár, PhD.
e-mail: peter.sugar@stuba.sk
tel.: +421917367301

Address: Janka Bottu 25, 917 24 Trnava, Slovak Republic
tel.: +421918646037
fax: +421906068499

Contact:

Director: Prof. Ing. Koloman Ulrich, PhD.
e-mail: koloman.ulrich@stuba.sk
tel.: +421906068364

New management of the Institute since 01/12/2014

Director: Prof. Ing. Peter Šugár, PhD.
e-mail: peter.sugar@stuba.sk
tel.: +421917367301

Address: Janka Bottu 25, 917 24 Trnava, Slovak Republic
tel.: +421918646037
fax: +421906068499

STAFF

- Professors: 6
- Assoc. Professors: 12
- Senior Lecturers: 11
- Research Fellows: 7
- PhD Students: 31

EDUCATION AT THE INSTITUTE

Number of students (of 30/10/2014) enrolled in the study programmes offered by the Institute: 589
Number of students graduated (in the academic year 2013/2014) from the study programmes offered by the Institute: 159

STUDY PROGRAMMES

BACHELOR’S DEGREE:
- Computer-Aided Production Technologies
- Production Technologies

MASTER’S DEGREE:
- Machining and Assembly
- Computer-Aided Design and Production
- Welding
- Industrial and Art Casting

DOCTORAL DEGREE:
- Machine Technologies and Materials
The graduate will have gained an in-depth knowledge of the technological processes of liquid metal preparation, production of moulds for industrial and art castings.

Industrial and Art Foundry

The graduate will be equipped with the theoretical knowledge of metallurgy of casting materials, processes, design of machine parts assembly. The graduate will have obtained a deep theoretical knowledge in the field of production technologies (machining, welding, forming, foundry and assembly), materials, tools, fixtures and machine tools supported by the knowledge of CAx technologies and systems. The graduate will be suitably prepared to work as a production specialist, tool designer, CNC and assembly specialist, as well as a leader in the sectors of manufacturing process design.

Computer-Aided Design and Production

Graduates from the programme will be suitably training to perform activities accompanied with the CAx Technologies and systems application. After completion of the programme, the graduate will be able to lead teams utilising engineering computer analyses, simulations of production processes, computer technologies in the field of computational technology utilisation and computer simulations in the field of thermal processes in order to minimise degradations of the chosen materials. The graduate can autonomously design technological procedures and control production in a foundry. The skills gained will enable the graduate to perform effectively in the public and private sectors, research roles, as well as in construction and project workplaces.

Welding

After completion of the programme, the graduate will be able to work with computational technology, software for simulation of casting processes, computer-aided design of the casting shape, and prediction of casting properties in the phase of production preparation. The graduate can autonomously design technological procedures and control production in a foundry. The skills gained will enable the graduate to perform effectively in the public and private sectors, research roles, as well as in construction and project workplaces.

DOCTORAL PROGRAMMES (Ph.D.)

Machine Technologies and Materials

The graduate will have developed a wide range of theoretical knowledge in the field of metallurgy, progressive technologies of chipless and chip processing of materials,
computer support and applications of CA technological systems, simulations and automation of technological processes. The graduate will have mastered the scientific methods of research and development in production processes, particularly in technologies of machining, welding, forming, foundry, machine metrology, assembly, powder metallurgy and CA technologies. After completing the programme the graduate will be able to autonomously articulate and solve research tasks, and to lead a research team. The graduate will be able to find employment in research and development institutes in managerial positions in the field of sophisticated production technologies, and in engineering universities.

**LIST OF SUBJECTS OFFERED BY THE INSTITUTE**

- Assembly Technology and CAA systems
- Assembly Theory
- Atelier of Computer-Aided Design and Manufacturing I, II, III
- Automation of Foundry Production
- Bachelor Project
- Bachelor Thesis
- CA systems and Computer Simulation Processes
- CAPP I, II
- CAx technologies
- CNC-machines Programming
- Computer Aided Forming Technology
- Computer Aided Productions Technologies I, II, III
- Computer Aided Welding Technology
- Design and Manufacturing of Welding Constructions
- Dissertation Project I, II, III, IV, V, VI
- Equipment for Foundry and Metal Casting
- Experimental Methods in Machining
- Finishing Methods of Machining
- Forming Machines
- Forming Technology
- Foundry Technology
- Geometrical Product Specification
- Graduate Project
- Graduate Thesis
- Inspection in Welding
- Introduction to Computer Aided Production Technologies
- Machine Tools and Tools
- Machining Technology and Assembly
- Measuring and Control Parameters of Products
- Mechanization and Automation in Machining
- Metallurgical Processes in Casting
- Methods of Scientific Work
- Metrology
- Metrology and CAQ Systems
- Paedaeutical Activity I, II, III, IV, V, VI
- Planning of Welding Manufacture
- Pre-degree Practice
- Production Preparation in Foundry and Welding
- Production Process Planning
- Production Systems II
- Professional Practice
- Programming of CNC Machines
- Progressive Machining Methods
- Progressive Methods of Assembly
- Progressive Methods of Moulds and Cores Production
- Projecting of Production Processes and Systems Design
- Quality Control and Casting Defects
- Quality Control of Weld Joints
- Quality Management Systems
- Research Work I, II, III, IV, V, VI
- Selected Parts from Theory and Technologies of Casting
- Selected Parts from Theory and Technologies of Forming
- Selected Parts from Theory and Technologies of Machining, Metrology and Assembly
- Selected Parts from Theory and Technology of Welding
- Soldering and Brazing
- Special Casting Technologies
- Special Technologies of Artistic Castings Production
- Special Welding Methods
- Technical Preparation of Production in Machining and Forming
- Technical Preparation of Production in Welding and Casting
- Technological Design
- Technology of Cast Iron Production
- Theory of Casting
- Theory of Forming
- Theory of Machining
- Theory of Welding
- Tribology
- Welding Machines and Equipment
- Welding Technology

**GRADUATE THESIS**

List of theses contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

**Master’s Theses**

- Stano, T.: Analysis of the deformation process in the cutting zone
- Horváth, M.: Analysis of deformation process in the machined material
- Bobok, Š.: Analysis of machined surface after grinding
- Manca, Š.: The analysis of cutting forces and torque in the drilling process
- Jagerčík, M.: Analysis of welded joints of Mg alloy with the addition of RE produced by laser
- Lisinovič, M.: Application of 3D printing to the manufacturing process for a small batch production
- Vetrik, L.: Numerical simulation aided precision forging of forged piece from light non-ferritic metal
- Chranček, J.: Resistance spot welding of magnesium alloy AZ61
- Satín, L.: CAE support of the thermoplastic injection moulding
- Kuchár, J.: The database of parameters of 5-axis machine tool
- Čapla, M.: Quality evaluation of clads based on the thickness, uniformity and integrity
- Štibranyi, P.: The Appreciation of surface of the composite coats resistant to attrition
- Palková, J.: The quality of machined surfaces at laser beam cutting
- Lobodáš, M.: Laser surface structuring

- Šišovský, M.: Laser micromachining
- Gruber, R.: Measurement of surface roughness after milling with different cutting edge inclination angle
- Greguš, R.: Measurement of cutting forces during milling when using tool with different cutting edge inclination angle
- Matejovič, J.: Measurement of cutting forces during High Speed steel milling
- Zaujec, R.: Methodology of geometry measuring of the shank cutting tools
- Šurinová, R.: Modernization of a calliper by the use of linear guide
- Babulík, A.: Design and optimization of the liquid cooled plate in simulation software Flotherm
- Bagin, M.: Design and production of moulds for plastic injection
- Šteflula, D.: Design and production of glass moulds
- Uhrinec, L.: Design and production of end mills with different helix angle
- Križan, J.: Design and production of surface forming tool using computer aided forming
- Triznová, J.: Design and production of the cutting insert chip breaker by laser micro machining
- Jedlička, D.: Design of automated machine for resistance projection welding of screws
- Konečná, L.: Design of Model and Manufacturing of University Ring by CAD/CAM software
- Pikálek, P.: Proposal of the assembly process of screws into the ball pivot for BMW models
- Vaňo, M.: Design of transfer device prototype
RESEARCH AT THE INSTITUTE

Areas of Research
- Production and measurement of complex-shaped surfaces,
- Laser and ultrasonic machining of difficult-to-machine materials,
- Numerical simulation and optimisation of sheet metal and bulk forming processes,
- Optimisation of CNC conventional metal spinning processes,
- Modification of surfaces of stainless steel with plasma discharge in electrolytes,
- Art casting,
- Classical and special methods of joining and cutting metallic and non-metallic materials,
- Surface Engineering and Tribology,
- Inoculation and modification of cast high-speed steels,
- Welding of duplex and super-duplex stainless steels,
- Non-destructive testing of welded joints,
- Non-destructive testing of welded joints
- Non-destructive testing of welded joints
- Non-destructive testing of welded joints
- Non-destructive testing of welded joints

Bunčiak, M.: Influence of the Milling Tool Geometry on Cutting Forces
Fekete, I.: Impact of protective atmosphere on the quality of laser welds from magnesium alloy AZ61
Ponca, M.: The influence of AZ 61 magnesium alloy welding parameters on the quality of welded joints
Gajdoš, M.: Impact of the width of cut on the cutting force during milling
Zahnaš, L.: Effect of pressure cutting fluid on the cutting tool wear
Dolnáčko, J.: Research of new Zn-Al based solder alloys
Pavelek, Ľ.: The using of modern ultrasonic methods for the duplex steel weld joint inspection
Struhář, F.: Use of computer aided tomography technology and Rapid Prototyping to the proposal of prosthesis in biomechanics
Tóth, R.: Dependence of cutting tool wear from machining strategy
Vydro, P.: Dependence of cutting forces from machining strategy
Kučerák, P.: Changing the mechanical properties of the molding sands with a protein based binder for long-term storage
Mancová, T.: Laser beam welding of aluminium components
Kákoš, J.: Welding of Magnesium Alloy AZ61 by disk laser
Jarná, M.: Welding of hardenable AI 7075 alloy by using a filler material
Pirožák, J.: Welding of AZ 31 Mg alloy by disk laser
Tóthová, E.: Welding of thin stainless austenitic steel AISI 304 by solid state laser
Straka, J.: Hybrid Welding of Thin (Steel) Materials in Pulse Regimes
Mészáros, D.: Laser welding of thin zinc-coated steel sheets

PhD Theses
Marčian, Miroslav: Analysis of the damage and the repair welded storage tank
Enger, Marco: The Development of Tribologically Optimized Surfaces by Nanolayers and Strengthening Phases
Kleinerdlerová, Ivana: Piercing in materials with abrasive water jet cutting
Hurajt, Marek: Study of electrolyte concentration influence on properties of electrolyte-plasma process during final surface treatment of stainless steel near-net-shape castings
Samardžiová, Michaela: Hardened steels turning by progressive Wiper tool
Dühring, Steven, Dipl.-Ing. (FH), PhD: Experimental-numerical method of the failure prediction by the heat treatment of steels
Kramár, Tomáš: Welding of magnesium alloys using selected welding technologies
Krampatká, Peter: Study of the effect of laser welding parameters on the final properties of welded joints of austenitic thin walled stainless steels
Kupec, Tomáš: Welding of light alloys using the FSW method

Habilitation Theses:
Šugárová, Jana: The study of spun parts properties produced by conventional metal spinning – Trnava, STU in Bratislava MTF, 2014

All important and original results are presented by our Institute, at seminars and conferences at home and abroad, and are published in reviewed or non-reviewed scientific journals and in professional journals. The results from the research activities are transferred to the educational process within specific subjects and also as a part of Bachelor’s, Master’s and PhD programmes.

Research characteristics
Research at the Institute of Production Technologies is focused on industrial technologies with respect to research and development in the sphere of high-tech technologies. The main fields of industrial technologies at the Institute of Production Technologies are: machining, forming, casting and welding.
The scientific directions are determined for the long-term and cover the production and technological aspects in the industry and education. Key directions of scientific research activity at the Institute of Production Technologies are focused on supporting the development of individual science and educational branches. In the frame of the specific responsibility, the Institute ensures personal and professional growth of all employees. The attention is devoted primarily to actual and prospective questions related to industrial technologies in the Slovak Republic, during this process provisions are also made for international trends, as well as the integration processes of the EU. The mark of scientific research work and activity is determined by originality of the scientific output of the teachers and scientific research employees in the Institute, the material output of the main workstations and the proposed solutions to scientific questions. The Institute of Production Technologies focuses on trans-regional pedagogic and scientific activities and also cooperates with many renowned scientific research institutes abroad. International co-operation in research is implemented mainly through the exchange of information, results, knowledge for education of PhD students (fellowships, educational visits, workshops).

The layout of the projects is focused primarily on production technologies in co-operation with industry in relation to the actual global problems.

**Areas of expertise**
- S-axis Machining
- Application of Progressive Cutting Tools
- Art Casting
- CAD/CAM/CAE Systems
- Casting Processes
- Design for Manufacturing and Assembly
- Control of Quality in Welding
- Cutting Fluids Application, Monitoring and Maintenance
- Die Forging
- Engineering Metrology
- Formability of Materials
- Forming Machines and Tools
- Laser Machining and Welding
- Modelling and Simulation of Technological Processes
- Optical 3D Scanning
- Programming of NC Machines
- Progressive Methods of Machining and Welding
- Stereology
- Surface Engineering and tribology
- Testing of Materials
- Welded Structures
- Welding and soldering

**PROJECTS OF THE INSTITUTE**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Technological heritability of the laser micromachining process and its influence on technological and exploitation properties of material.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Prof. Ing. Peter Šugár, CSc.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2011</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2014</td>
</tr>
<tr>
<td>Programme</td>
<td>VEGA</td>
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<tr>
<td>Annotation</td>
<td>The goal of the project is to research the laser micromachining process (laser micromilling and so-called laser microstructuring) during machining of metals by solid state Nd: YAG and ytterbium fiber laser. Two fields of interest are solved in this project. The first is the assignment of laser-induced surface degradation relevancy on changes in corrosion resistance of stainless steels and commercially pure titanium with the different degree of deformation strengthening (thin sheet plates made by technology of drawing and metal spinning). The second area of interest is to define optimal technological conditions of forming tools laser structuring with the goal to optimise the tribology conditions in the tool – work-piece interface.</td>
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<table>
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<tr>
<th>Project Title</th>
<th>Research of weld joints properties of duplex and superduplex steels</th>
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</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Prof. Ing. Koloman Ulrich, PhD.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/10/2013</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2016</td>
</tr>
<tr>
<td>Programme</td>
<td>APVV</td>
</tr>
<tr>
<td>Annotation</td>
<td>The project is focused on the basic research conditions and procedures for creating the weld joints by laser and electron beam in selected types of duplex stainless steels with a ferriticaustenitic structure. Concentrated energy sources, due to their flexibility, allow for the immediate application of preheating before the welding process and postheating after the welding process using a defocused or rasterised beam, which provides great research potential. The weldability of duplex and superduplex steels, the structural analysis and the tests of mechanical properties, as well as corrosion properties will be investigated at particular stages of the project. All processes of the technological network participate in creating the final properties of the product. For this reason, the experimental research programme will also cover the analysis of weld joints created from materials influenced by different types and levels of deformation, as well as the sheet forming of weld joints. A special focus will be devoted to finding the correlation between the crucial technological parameters of the process and the properties of the weld joint. The project has the aim to push the knowledge boundaries of the welding process of selected duplex stainless steels through the application of concentrated energy sources, such as laser and electron beam.</td>
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<table>
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<tr>
<th>Project Title</th>
<th>Research of new soldering alloys for fluxless soldering with the application of beam technologies and ultrasound</th>
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<tbody>
<tr>
<td>Coordinator</td>
<td>doc. Ing. Roman Koleňák, PhD.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/10/2013</td>
</tr>
<tr>
<td>End Date</td>
<td>31/05/2017</td>
</tr>
<tr>
<td>Programme</td>
<td>APVV</td>
</tr>
<tr>
<td>Annotation</td>
<td>The project is oriented towards the research of environmentally friendly solder alloys and conditions of soldering with progressive technologies. The designed and experimentally manufactured solders will be used for the soldering of metallic and ceramic materials at higher application temperatures. To ensure the wettability of ceramic and hardtosolder materials, the solders will be alloyed with active elements and metals from the group of lanthanides. The tests of technological solderability of ceramic and metallic materials will be performed through the use of new soldering alloys for fluxless soldering, with the application of laser technologies, power ultrasound and electron beam. The structural characteristics of solders and soldered joints will be studied under different soldering conditions. Interactions in the boundary of joined material and the solder will be investigated. Qualitative criteria of solderability such as wettability, spreadability, diffusion and erosion will be determined at standard and extreme soldering conditions for research to investigate the application conditions of soldering. The shear strength of soldered joints fabricated in metallic and ceramic materials will be determined.</td>
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<tr>
<td>Project Title</td>
<td>Coordinator</td>
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<tr>
<td>The implementation of blended learning principles into teaching the programming of CNC machine tools and devices with a progressive kinematic structure</td>
<td>Prof. Ing. Milan Marônek, CSc.</td>
</tr>
<tr>
<td>An investigation of selected machining process characteristics by using HI-technologies of machining and their effect on the resulting quality of machined surfaces and trouble-free loading</td>
<td>Prof. Ing. Peter Pakorný, PhD.</td>
</tr>
<tr>
<td>Research into the defect diagnostic of welded joint through the use of modern NDT methods</td>
<td>Prof. Ing. Koloman Ulrich, PhD.</td>
</tr>
<tr>
<td>Utilising advanced methods of optical 3D scanning for the analysis of weldments</td>
<td>Prof. Ing. Milan Marônek, CSc.</td>
</tr>
<tr>
<td>Research and Development Centre in the field of electron-beam and progressive arc welding technologies, cladding and surface finishing</td>
<td>Prof. Ing. Milan Marônek, CSc.</td>
</tr>
</tbody>
</table>

The project is aimed at the investigation of selected characteristics of machining process (cutting forces, machining of thin-wall components, wear and restoration of the tool’s cutting properties, cutting media and strategies of machining). The above-mentioned characteristics of machining affect the quality of parts. The project therefore investigates their effect on the resulting characteristics of components. In the process of investigation, the researchers will use HI-technologies in the Centre of Excellence for 5-axis machining (high-speed machine tools, milling-ultrasound machine, laser machine, tool grinder). The required geometric and dimension precision of the fabricated component determine the conditions for assembly and thus also the result of the assembly process. The project will therefore elaborate a method of harmonising production technology with the requirements defined in the geometric specifications of products.

The project is oriented on the unification of teaching procedures within the subject of Programming CNC machine tools and devices with progressive kinematic structure and using the learned blending principles. The target group involves the students of all degrees levels, including postgraduate students and partially also the students of secondary technical schools. Besides defining a unified content structure of synchronous and asynchronous on-line education and preparing the conditions for face-to-face laboratory education of programming a wide scale of CNC production and measurement technology, the project also has the ambition to build a system for cooperation between education and production entities, with the aim to intensify information transfer in shaping the graduate profile in the field in accordance with the current demands of practice.

The goal is to build a high-tech workplace for research of progressive welding technologies, surface hardening, remelting and depositing special layers by electron beam. Another goal is to build a top-class workplace for the complex research of technology of welding and cladding processes by using the methods of electric and plasma arcs welding in all welding positions and in any weld/clad trajectory.
Project Title: The technical infrastructure of research and development for the field of temperature gauging by the contact and non-contact methods of measurement

Coordinator: doc. Ing. Augustín Görög, PhD.
Start Date: 01/10/2012
End Date: 30/09/2014
Programme: OP VaV
Annotation: The strategic objective of the project is to build research and development workplaces oriented on the research of progressive welding technologies and on the increase of research potential in the field of engineering metrology by using advanced methods of measuring the precision of machine parts, and its integration into research and developments networks. The project output will have a positive impact on the development of the education process and the preparation of a new generation of researchers and qualified staff for high-tech industrial sectors. New machines and devices will provide favourable conditions for direct cooperation with practice, thus enabling effective transfer of research results into practice.

Project Title: The effect of 5-axis grinding parameters on the geometric precision of cutting tools with a shank

Coordinator: doc. Ing. Štefan Václav, PhD.
Start Date: 01/01/2012
End Date: 31/12/2014
Programme: VEGA
Annotation: The project will investigate the precision of grinding and the geometry of cutting tools with a shank by using a new method developed by the project authors. The theory of cutting forces in grinding is not sufficiently developed so far. The project output will be the application of the above-mentioned theory of highly parametric 3-axis grinding to 5-axis grinding. The project goal is also the verification of the tools produced by the researchers involved in the project on 5-axis milling machines, and subsequent measurement of their geometry prior to and after machining on both the Zoller 5-axis measuring machine and optical scanner.

Project Title: Building an on-line classroom for the dynamic education of secondary school and university students in the field of design and production of free-form parts

Coordinator: Prof. Dr. Ing. Jozef Peterka
Start Date: 01/01/2012
End Date: 31/12/2014
Programme: KEGA
Annotation: The project is focused on building an on-line classroom for the dynamic education of secondary school and university students, and the subsequent piloting of the on-line classroom for education of the wider public in the field of programming CNC machines and CAD/CAM systems, primarily for the accredited study programmes of Computer-aided Production Technologies (Bc.) and Computer-aided Design and Production (Master’s degree) in STU MTF. The on-line classroom will provide dynamic education in two forms: 1/ on-line practical lectures and exercises in real time, 2/ on-line testing in real time. The on-line classroom with software and hardware support will help the full-time and part-time university students as well as allowing secondary technical school students to acquire the knowledge without physical contact and attendance to classes at STU MTF in Trnava. The contents of the pilot project will involve the fundamentals of programming CNC machines and CAD/CAM systems (design and production of parts). Complex materials (texts, presentations, multimedia videos, model examples) developed for the on-line classroom will be available on the Internet website for all potential target groups, including the students of all forms of study at STU MTF in Trnava, the training centre in Dubnica, as well as the students of other universities and secondary schools and the general public. The results will be applicable in the Slovak Republic and abroad.

Project Title: Industrial research of silenblocks for excessive loading at extreme temperatures in the field of industrial application

Coordinator: doc. Ing. Jozef Bílik, PhD.
Start Date: 01/10/2011
End Date: 31/05/2015
Programme: OP VaV
Annotation: The project is focused on building an on-line classroom for the dynamic education of secondary school and university students, and the subsequent piloting of the on-line classroom for education of the wider public in the field of programming CNC machines and CAD/CAM systems, primarily for the accredited study programmes of Computer-aided Production Technologies (Bc.) and Computer-aided Design and Production (Master’s degree) in STU MTF. The on-line classroom will provide dynamic education in two forms: 1/ on-line practical lectures and exercises in real time, 2/ on-line testing in real time. The on-line classroom with software and hardware support will help the full-time and part-time university students as well as allowing secondary technical school students to acquire the knowledge without physical contact and attendance to classes at STU MTF in Trnava. The contents of the pilot project will involve the fundamentals of programming CNC machines and CAD/CAM systems (design and production of parts). Complex materials (texts, presentations, multimedia videos, model examples) developed for the on-line classroom will be available on the Internet website for all potential target groups, including the students of all forms of study at STU MTF in Trnava, the training centre in Dubnica, as well as the students of other universities and secondary schools and the general public. The results will be applicable in the Slovak Republic and abroad.

Project Title: Research into modified soldering alloys for the fluxless soldering of the metal and ceramic materials.

Coordinator: doc. Ing. Roman Koleňák, PhD.
Start Date: 01/01/2014
End Date: 31/12/2016
Programme: VEGA
Annotation: The project is focused on the research into modified soldering alloys, particularly those of the Sn-Ag-Ti, Sn-Ag-Cu and Zn-Ag-Al type. New soldering alloys with a small amount of active metals (In, Ga, Y and some elements of the group of lanthanoids) will be experimentally prepared. Solders will be designed for fluxless soldering by using the technologies of laser and high-power ultrasound. The modified soldering alloys will be tested for technological solderability of ceramic and metallic materials, in order to determine the structure of the solders and solder joints under various conditions of soldering. Interactions between the soldered material and solder will be studied along with the mechanical properties of the soldered joints.
# Visits of Staff Members to Foreign Institutions

<table>
<thead>
<tr>
<th>Country</th>
<th>Employee</th>
<th>Country</th>
<th>Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belarus</td>
<td>Čaus Alexander, Prof. Ing., DrSc.</td>
<td>Germany</td>
<td>Baránek Ivan, Prof. Ing., CSc.</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Baránek Ivan, Prof. Ing., CSc.</td>
<td></td>
<td>Buransky Ivan, Ing., PhD.</td>
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<tr>
<td></td>
<td>Bílik Jozef, doc. Ing., PhD.</td>
<td>Czech Republic</td>
<td>Kovač Martin, Ing., PhD.</td>
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<td>Buransky Ivan, Ing., PhD.</td>
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<td>Necep Martín, Ing., PhD.</td>
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<td></td>
<td>Górog Augustín, doc. Ing., PhD.</td>
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<td>Samardžiová Michaela, Ing., PhD.</td>
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<td>Kovač Martin, Ing., PhD.</td>
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<td>Šíma Vladimír, Ing., PhD.</td>
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<td></td>
<td>Nepal Martin, Ing., PhD.</td>
<td></td>
<td>Šugár Jana, doc. Ing., PhD.</td>
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<td>Pokorný Peter, doc. Ing., PhD.</td>
<td>Poland</td>
<td>Hódolová Erika, doc. Ing., PhD.</td>
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<td></td>
<td>Sahul Miroslav, Ing., PhD.</td>
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<td>Samardžiová Michaela, Ing., PhD.</td>
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<td>Morovič Ladislav, doc. Ing., PhD.</td>
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<td>Šugárová Jana, doc. Ing., PhD.</td>
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<td>Tittel Viktor, doc. Ing., CSc.</td>
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<td>Václav Štefan, doc. Ing., PhD.</td>
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<tr>
<td>France</td>
<td>Beznák Matej, doc. Ing., CSc.</td>
<td>Russia</td>
<td>Pokorný Peter, doc. Ing., PhD.</td>
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<tr>
<td>Republic of Korea</td>
<td>Bárt Jozef, Ing., PhD.</td>
<td>USA</td>
<td>Václav Štefan, doc. Ing., PhD.</td>
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<tr>
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<td>Marošek Milan, Prof. Ing., CSc.</td>
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<td>Hungary</td>
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<td>Switzerland</td>
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<td>Hódolová Erika, doc. Ing., PhD.</td>
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<td>Kovářová Ingrid, Ing., PhD.</td>
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<td>Marošek Milan, Prof. Ing., CSc.</td>
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<td>Morovič Ladislav, doc. Ing., PhD.</td>
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<td>Šugár Peter, Prof. Ing., CSc.</td>
<td>Italy</td>
<td>Šugár Jana, doc. Ing., PhD.</td>
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<tr>
<td></td>
<td>Ulrich Koloman, Prof. Ing., PhD.</td>
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</tr>
</tbody>
</table>

# Membership of Slovak Professional Organisations

**Slovak Welding Society**  
Prof. Ing. Koloman Ulrich, PhD.  
Prof. Ing. Milán Marošek, CSc.  
Prof. Ing. Milan Turňa, PhD.  
doc. Ing. Pavel Kovačovský, PhD.  
doc. Ing. Roman Kolečňák, PhD.  
doc. Ing. Erika Hódolová, PhD.  
Ing. Ingrid Kovačková, PhD.  
Ing. Ladislav Pavlovič  
Ing. Vladimír Púčik

**Slovak Society of Tribology**  
doc. Ing. Erika Hódolová, PhD.  
Ing. Ingrid Kovačková, PhD.  
doc. Ing. Ladislav Morovič, PhD.

**Slovak Foundry Society**  
doc. Ing. Matej Beznák, PhD.

**Slovak Associations of Steel Constructions**  
Prof. Ing. Koloman Ulrich, PhD.

**Slovak Chamber of Commerce and Industry – Section of Production Machines and Equipment**  
Prof. Ing. Ivan Baránek, PhD.
Slovak Metal Science Society
Prof. Ing. Ivan Baránek, PhD.
Prof. Ing. Peter Šugár, CSc.
Prof. Ing. Milan Marônek, CSc.
doc. Ing. Jozef Blik, PhD.
doc. Ing. Mária Kapustová, PhD.
doc. Ing. Roman Košiček, PhD.
doc. Ing. Maroš Martiník, PhD.
doc. Ing. Viktor Tittel, CSc.
Ing. Robert Sobota, PhD.
Ing. Jana Šugárová, PhD.

Slovak Metrology Society
doc. Ing. Augustín Görög, PhD.

Technical Standard Committee
Prof. Ing. Koloman Ulrich, PhD.

First Welding Company, Inc.
Prof. Ing. Koloman Ulrich, PhD.

Slovak Institute of Technological Normalization – TK 76
Corrosion and Material Protection against Corrosion
doc. Ing. Štefan Václav, PhD.
doc. Ing. Peter Pokorný, PhD.

Czech Society for New Materials and Technologies
doc. Ing. Pavel Kovačovský, PhD.

International Journal of Advances in Machining and Forming Operations
Prof. Ing. Alexander Čaus, DrSc.

Trenie i Iznos (Friction and Wear)
Prof. Ing. Alexander Čaus, DrSc.

American Welding Society
Prof. Ing. Milan Turňa, EWE PhD.

Czech Welding Society
Prof. Ing. Milan Turňa, PhD.

MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS

International Institute of Welding
Prof. Ing. Koloman Ulrich, PhD.
Prof. Ing. Milan Marônek, CSc.
doc. Ing. Erika Hodulová, PhD.
Ingrid Kovaříková, PhD.

American Welding Society
Prof. Ing. Milan Turňa, EWE PhD.

Czech Welding Society
Prof. Ing. Milan Turňa, PhD.

PUBLICATIONS (MOST IMPORTANT PUBLICATIONS IN 2014)

List of publications contains authentic translations of the titles into English. The original wording as translated by the Institute, i.e. without English language proofreading.


INSTITUTE OF PRODUCTION SYSTEMS AND APPLIED MECHANICS

CONTACT

Director         Prof. Dr. Ing. Karol Velíšek, CSc.
e-mail:           karol.velisek@stuba.sk
tel.:             +421918646053

Address          Rázusova 2, 917 24 Trnava,
                  Slovak Republic
tel.:             +421918646035,
fax:              +421/33/5511601

STAFF

- Professors:     1
- Assoc. Professors: 5
- Senior Lecturers: 12
- Research Fellows: 5
- PhD Students:    4

EDUCATION AT THE INSTITUTE

Number of students (at 30/10/2013) registered on study programmes offered by the Institute: 197
Number of students graduated in the academic year 2013/2014 from the study programmes offered by the Institute: 53

STUDY PROGRAMMES

- Production Devices and Systems
ACTIVITIES OF THE INSTITUTE

Date Title of event or activity at the Institute in 2014

GRADUATE PROFILE

BACHELOR’S PROGRAMME (Bc.)
Production Devices and Systems
The graduate will gain a complete Bachelor’s degree education in the field of manufacturing engineering focused on engineering production including the maintenance and means of mechanisation and automation. The graduate will understand machine technologies and applied tools. The individual will have acquired knowledge in the fundamentals of management, environmental engineering, work safety and health protection. The graduate will be able to solve the problems in the field of technical materials and their properties, as well as machine mechanics. After completion of the course the graduate will be prepared either for the Master’s degree study programme in production devices and systems or for immediate entry to the job market. The graduate will find opportunities as a designer of automated production systems and devices, as a technologist, self-employed in engineering services or as a specialist in various production sections.

MASTER’S PROGRAMMES (Ing.)
Production Devices and Systems
The graduate will gain a complete university (Master’s degree) education in the field of manufacturing engineering and materials, production processes and production systems. The individual will understand the function of machines and constructions of production equipment. The graduate will have developed knowledge in the field of production machines and materials used in the processes of manufacturing and will be able to solve the tasks of machine mechanics, mechanisation and automation. After completing the programme the graduate will be able to recognise social, moral, legal and economic impacts of the profession and will be prepared to either continue studying at post-graduate level, implementing advanced methods and techniques of design and development, or to enter the job market immediately as an expert in production, project and development organisations in solving conceptual technical and organisational tasks of complex automation of production processes.

LIST OF SUBJECTS OFFERED BY THE INSTITUTE

3D modelling and verification of computer models
Applied Mechanics
Assembly Machines
Bachelor’s Project
Bachelor’s Thesis
Computer Aided Design I, II, III
Cutting Tools
Design of Production Systems
Diploma Thesis
Dissertation project I-VI
Elasticity, Strength and Plasticity
Experimental Methods and Technical Diagnostics
Finite Element Method
Fixtures
Fundamentals of Engineering Design and Technical Documentation
Graduation Project
Hydraulic and Pneumatic Mechanisms
Industrial Robots and Manipulators
Industrial Robots and Manipulators
Logistics of Production Systems
Machine Parts and Mechanisms

Graduation Project
Performance of Production Systems
Professional Practice
Programming of Production and Manipulating Devices
Reliability and Safety of Technical Systems
Research paper I-VII
Technological Process Modelling and Simulation
Theory of Automatic Machines
Theory of Systems and Automatic Machines

GRADUATE THESIS

List of theses contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

Master’s Theses
Matúš, Ľ.: Automation of manual installer workplace RSEMB
Kožina, M.: Inter-operational transport in production area of manufacturing company INA Skalica, Ltd.
Kubala, I.: Design and technical implementation of improvements specific ABL
Prištíc, M.: Design for automatic manipulation station
Hlavanda, P.: The design of automation process for marking wooden hammers
Hudy, E.: Design of automation production car body subassemblies
Tolarovič, M.: Design of an automated assembly department for assembly of the selected product

Chvaščák, M.: New design concept of automatic assembly line for production of VW Tiguan sunvisors
Šuško, A.: Gripper design for robotized assembly workplace for manual assembly elimination
Hudecová, D.: Proposal for a flexible fixture for components measured Coordinate Measuring Machine
Petráš, L.: The design of glue equipment with automatic glue supply in INA Skalica, s.s. o.
Jandík, J.: Proposal of a semi-automated station for pre-assembly of gas valves
Nádaský, D.: Proposal for additional lighting and shading in the mounting station with camera control system iCIM
RESEARCH AT THE INSTITUTE

Areas of Research

- intelligent workpiece clamping,
- intelligent assembly,
- intelligent assembly systems,
- thematic network on manufacturing technologies,
- new concepts of integrated multifunction manufacturing systems,
- modelling, analysis, simulation and experimental investigation of machine aggregates as mechatronic systems,
- investigation of new materials with progressive tribological properties,
- research and application of new approaches in numerical methods — analysis and simulation of technological and industrial processes, static and dynamic analysis of engineering structures,
- numerical simulation of heat transfer processes, fluid-structure interaction,
- research and development in the field of theoretical and applied mechanics.

Research characteristics

The research projects at the Institute of Production Systems and Applied Mechanics are focused on the support and development of education in the study programmes of Production Devices and Systems at Bachelor’s, Master’s and PhD. Degree levels. The research activities of the Institute are aimed at obtaining solutions for up-to-date problems and tasks from the field of production systems and devices, applied mechanics, thermodynamics, heat transfer and numerical modelling of technological processes.

Main topics of research activities:

- Flexible manufacturing systems,
- Intelligent assembly systems,
- Intelligent clamping systems,
- Special production systems,
- Pneumatics and electro-pneumatics in control systems,
- Material flow in production,
- Use of computers in design and manufacturing of machines and devices,
- Modelling, analyses and simulations of mechanical systems and machine aggregates,
- Mechatronical principle application for production devices,
- Methods of diagnostics and identification,
- Mechanical systems reliability,
- Vibrations, acoustics and biomechanics,
- Determination of cooling characteristics for heat treating media,
- Mechanical, thermal, fluid and other analyses for mechanical parts of machine and structures,
- Modelling, numerical simulations, analyses and optimisation for processes of forming, welding, casting and heat treatment.

At the Institute, the following laboratories are currently in operation: The Laboratory of Flexible Manufacturing Systems with robotised manipulation supported by drawing - free production, The Laboratory of Robotics, the Virtual Laboratory of Pneumatics and Electro-pneumatics Systems, the Laboratory of Pneumatics, the FESTO Laboratory, the Laboratory of CAD Systems, the Laboratory of Machine Mechanics, the Laboratory of Tribology, the Laboratory of Thermodynamics and Mechanics of Fluids, the Laboratory of Numerical Analyses, the Laboratory of Modelling, the Laboratory for Vibration and Acoustics Research and also the joint Laboratory of Thermophysical Measurement and Computation.
In the framework of cooperation between research and practice, the Institute cooperates with several industrial enterprises and research centres (FESTO spol. s r.o. Bratislava; SMC Priemyselná automatisácia spol. s r.o. Bratislava; ZF Sachs Slovakia, a.s. Trnava; TOMA INDUSTRIES spol. s r.o. Trnava; ŽOS, a.s. Trnava; INA Skalka, spol. s r.o. Skalka; ULJE, a.s. Trnava; EBO Slovenske elektrarne, a.s. Jaslovske Bohunice; JAVYS, a.s. Jaslovske Bohunice; AllDeco, spol. s r.o. Jaslovske Bohunice) and with Institutes of the Slovak Academy of Sciences, metal design Slovakia a.s.

An important part of the research activities of the Institute is represented by cooperation with universities abroad. The most important partners are TU Vienna, TU Miskolc, TU Cluj-Napoca, TU Poznań, VUT Brno, TU Budapest, UTB Zlín, VŠB Ostrava, TU Brašov, TU Chemnitz, ZČU Plzeň, TU Izhovsk, and many others.

The results of research activities are published in domestic and international journals and presented at scientific conferences and symposiums. The obtained results are applied in education as well.

Areas of expertise
- Acoustics and Vibration of Mechanical Systems
- Automation of Production and Assembly
- Numerical Analysis and Simulation of Technological Processes
- Industrial Heating
- Structural Analyses in the Area of Nuclear Energy
- Thermal Analyses, Measurement of Thermophysical Properties
- Production Technology
- Production Systems

**PROJECTS OF THE INSTITUTE**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>The analysis of nonequilibrium thermal, metallurgical and stress-strain processes in production technologies involving rapid cooling and solidification of metallic materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>doc. RNDr. Mária Behúlová, CSc.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2011</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2014</td>
</tr>
<tr>
<td>Programme</td>
<td>VEGA</td>
</tr>
<tr>
<td>Annotation</td>
<td>Rapid cooling and solidification of materials in nonequilibrium conditions is used in several advanced technologies of production and the processing of metallic materials. The research in the framework of the submitted project will be focused on experimental investigation, numerical simulation and analysis of nonequilibrium thermal, metallurgical and stress-strain processes in technologies for the preparation of rapidly solidified powders using inert gas atomisation of melt, material forming in semisolid state and also the laser welding and surface heat treatment. The main aim of the project is the identification of common characteristics, phenomena and nonequilibrium processes leading to the development of refined microstructures in the conditions of rapid cooling and solidification of materials. In the theoretical field, the project should contribute to the explanation of physical and metallurgical reasons and mechanisms of metastable structures development in the highalloyed materials on the base of iron and aluminium.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Research into the possibilities of &quot;intelligence&quot; implementation in the assembly process</th>
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<tbody>
<tr>
<td>Coordinator</td>
<td>doc. Ing. Peter Koštál, PhD.</td>
</tr>
<tr>
<td>Start Date</td>
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<td>31/12/2014</td>
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<tr>
<td>Programme</td>
<td>VEGA</td>
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<tr>
<td>Annotation</td>
<td>The intelligent assembly paradigm includes a new approach to assembly system structure design. For manipulation and assembly the industrial robot is used and equipped with the industrial vision system. Intelligent behaviours are based on the monitoring of important parameters of the system and its environment and the flexible reaction to changes. Realisation and utilisation of this design paradigm as an &quot;intelligent assembly system&quot; enables the flexible system to react to the production requirements as soon as the environment changes. Results of these flexible reactions are a smaller layout space through decreasing the production and investment costs and by increasing productivity.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Project Title</th>
<th>Education for practice: Virtual Commissioning as a future technology tool for virtual implementation of production systems into automobile production within the &quot;Digital Company&quot; concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Ing. Roman Ružarovský, PhD.</td>
</tr>
<tr>
<td>Type:</td>
<td>-- other domestic --</td>
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<tr>
<td>Date from:</td>
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<td>Date to:</td>
<td>31/07/2015</td>
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<tr>
<td>Annotation:</td>
<td>The project is focused on the primary education of the young STU MTF UVSM teachers and students with the aim of increasing their knowledge, technology and practical levels, with the emphasis on devising and virtual implementation of the robotic, production and assembly systems in the automobile industry.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Building a virtual laboratory of robotics and manipulation technology</th>
</tr>
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<tbody>
<tr>
<td>Coordinator</td>
<td>Prof.h.c. Prof. Ing. Karol Veľtík, CSc.</td>
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<tr>
<td>Type:</td>
<td>KEGA</td>
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<tr>
<td>State:</td>
<td>in progress</td>
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<td>Date from:</td>
<td>01/01/2014</td>
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<tr>
<td>Date to:</td>
<td>31/12/2016</td>
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<tr>
<td>Identification:</td>
<td>027STU-4/2014</td>
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<tr>
<td>Annotation:</td>
<td>The aim of the project is to build a laboratory with a set of training modules in the field of automation and industrial robotics, for the purposes of teaching the principles of automatic control of manipulation technology and programming of industrial robots, which are currently introduced in industrial practice. The laboratory will enable the building of student knowledge in the field of automated and robotised systems by using the innovative educational programme and methods along with modern CA technologies including e-learning. The laboratory will enable various application tasks to be dealt with, using various automation means and several control levels, including simulation and subsequent verification on real industrial components.</td>
</tr>
</tbody>
</table>
### VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

<table>
<thead>
<tr>
<th>Country</th>
<th>Employee</th>
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</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>Behúlová Mária, doc. RNDr., CSc.</td>
</tr>
<tr>
<td></td>
<td>Bučányová Marcela, Ing., PhD.</td>
</tr>
<tr>
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<td>Đuriš Rastislav, Ing., PhD.</td>
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<td>Holubek Radovan, Ing., PhD.</td>
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<td></td>
<td>Nad Milan, doc. InG., CSc.</td>
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<tr>
<td></td>
<td>Ružarovsky Roman, Ing., PhD.</td>
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<tr>
<td></td>
<td>Veľšek Karol, Prof.h.c. Prof. InG., CSc.</td>
</tr>
<tr>
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<td>Vetríková Nina, Ing., PhD.</td>
</tr>
<tr>
<td>Hungary</td>
<td>Košťál Peter, doc. InG., PhD.</td>
</tr>
<tr>
<td>Mexico</td>
<td>Babalová Eva, Ing., PhD.</td>
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<tr>
<td></td>
<td>Behúlová Mária, doc.RNDr., CSc.</td>
</tr>
<tr>
<td>Germany</td>
<td>Ružarovsky Roman, Ing., PhD.</td>
</tr>
<tr>
<td></td>
<td>Veľšek Karol, Prof.h.c. Prof. InG., CSc.</td>
</tr>
</tbody>
</table>

### MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS

- **Slovak Acoustical Society**
  - doc. Ing. Milan Naď, PhD.
  - Ing. Tibor Nánasi, PhD.

- **Slovak Welding Society**
  - Ing. Helena Kraváriková, PhD.
  - Ing. Jarmila Oravcová, PhD.

- **Technical Commission 21 SÚTN Bratislava**
  - doc. Ing. Milan Naď, PhD.
  - Ing. Tibor Nánasi, PhD.

### MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS

- **Society of Machining and Machine Tools**
  - Prof. h. c. Prof. Ing. Karol Veľšek, CSc.
  - doc. Ing. Peter Košťál, PhD.
  - doc. Ing. František Pecháček, PhD.
  - Ing. Marcela Bučányová, PhD.

- **OIAV - ÖSTERREICHISCHER INGENIEUR - UND ARCHITEKTEN – VEREIN**
  - Prof. h. c. Prof. Ing. Karol Veľšek, CSc.

- **WASET - World Academy of Science, Engineering and Technology - Scientific Committee and Editorial Review Board**
  - Prof. h. c. Prof. Ing. Karol Veľšek, CSc.
  - doc. Ing. Peter Košťál, PhD.
  - Ing. Nina Danšová, PhD.
  - Ing. Roman Ružarovsky, PhD.

- **The Czechoslovak Association for Crystal Growth**
  - doc. RNDr. Mária Behúlová, PhD.

- **European Acoustical Association**
  - Ing. Tibor Nánasi, PhD.
  - doc. Ing. Milan Naď, PhD.

- **Slovak Associations of Mechanical Engineers (SASI)**
  - Prof. h. c. Prof. Ing. Karol Veľšek, CSc.
  - doc. Ing. Peter Košťál, PhD.
  - doc. Ing. František Pecháček, PhD.
  - Ing. Radovan Holubek, PhD.
  - Ing. Roman Ružarovsky, PhD.

- **Expert Group for Chemistry and Physics of Solids**
  - doc. RNDr. Mária Behúlová, CSc.

- **Central Europe Association for Computational Mechanics**
  - Ing. Tibor Nánasi, PhD.
  - doc. Ing. Milan Naď, PhD.
  - Ing. Rastislav Đuriš, PhD.

- **IACSIT - International Association of Computer Science and Information Technology**
  - doc. Ing. Peter Košťál, PhD.
  - doc. RNDr. Mária Behúlová, PhD.
  - Ing. Andrea Mudriková, PhD.

- **IIIS The International Institute of Informatics and Systemics**
  - Ing. Nina Danšová, PhD.

- **SCIEI - Science and Engineering Institute**
  - doc. RNDr. Mária Behúlová, PhD.
List of publications contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.


This part of Annual Report 2014 was verified by Prof. h. c. Prof. Ing. Karol Velíšek, CSc.
INSTITUTE OF INDUSTRIAL ENGINEERING AND MANAGEMENT

CONTACT

New management of the Institute since 01/12/2014

Director: doc. Ing. Jana Šujanová, CSc.
e-mail: jana.sujanova@stuba.sk
tel.: +421 918 646 062

Address: Paulínska 16, 917 24 Trnava, Slovak Republic
tel.: +421 918 646 032

STAFF

- Professors: 5
- Assoc. Professors: 9
- Senior Lecturers: 17
- Research Fellows: 6
- PhD Students: 34

EDUCATION AT THE INSTITUTE

Number of students (at 30/10/2014) registered on study programmes offered by the Institute: 849
Number of students graduated in the academic year 2013/2014 from the study programmes offered by the Institute: 302

STUDY PROGRAMMES

- Industrial Management
- Personnel Policy in Industrial Plant
<table>
<thead>
<tr>
<th>Date</th>
<th>Title of event or activity at the Institute in 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>18/01/ – 21/01/ 2014</td>
<td>Visit of dr. ing. Anna Saniuk, dr. hab. ing. Sebastian Saniuk and dr hab. ing. Krysztof Witkowski – University of Zielona Góra.</td>
</tr>
<tr>
<td>31/01/ – 31/05/ 2014</td>
<td>Erasmus mobility in Johnson Controls, Poland – Ing. Matej Daňo.</td>
</tr>
<tr>
<td>13/03/ – 17/06/ 2014</td>
<td>SANA mobility: dr. ing. Marcin Relich.</td>
</tr>
<tr>
<td>09/04/ 2014</td>
<td>Student Bc. Vladimír Kračko won the 2nd place in the 10th year of the International Student Research Conference 2014 in the Master's category at the Faculty of Economics and Management, University of Tomáš Baťa in Zlín, Czech Republic.</td>
</tr>
<tr>
<td>10 – 11/04/ 2014</td>
<td>Visit of Prof. Dr. Marta ChristinaSuciu, Academia de Studii Economice din București – Romania.</td>
</tr>
<tr>
<td>23/04/ 2014</td>
<td>Visit of a foreign guest and negotiations on potential international cooperation with Amir Raveh of Create-Net, an expert in start-ups.</td>
</tr>
<tr>
<td>24 – 25/04/ 2014</td>
<td>Festival of Science and Innovations within the project of the V4 Festival of Science as a platform for intensifying collaboration among V4 universities, <a href="http://festivalofscience.eu/program/konferencia">http://festivalofscience.eu/program/konferencia</a></td>
</tr>
<tr>
<td>24/04/2014</td>
<td>Visit of a foreign guest and negotiations on potential international cooperation with Assaf Mendelson of Create-Net, an expert in start-ups and CEO of EAI Italy.</td>
</tr>
<tr>
<td>25/04/2014</td>
<td>Visit of a foreign guest and negotiations on potential international cooperation with Rumen Dobrinsky, an expert in the field of international projects.</td>
</tr>
<tr>
<td>06/05/2014</td>
<td>Bc. Ján Juroš, an STU MTF student won the 2nd place in the 55th year of the international Student Research Conference at the TU in Zvolen, Faculty of Wood Science and Engineering.</td>
</tr>
<tr>
<td>13/05 – 24/06/ 2014</td>
<td>Visit of a foreign guest and negotiations on potential international cooperation with Atul B. Borade and Samir J. Deshmukh of Jawaharlal Nehru University, India.</td>
</tr>
<tr>
<td>26 – 28/05/ 2014</td>
<td>Seminar within an EU project: Stela Stanecheva Agreement of cooperation signed by Dr. Imre Túróczki and Dr. Marta Kórodi of Szolnok College, Hungary.</td>
</tr>
<tr>
<td>11/07/2014</td>
<td>Summer University in cooperation with the Vienna University in Austria within the project “Knowledge exchange in the framework of alternative economic systems for the promotion of sustainable regional development”. (acronym ALTECS)</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>The Best Student Project, finals of the competition co-organised by UPIM, as a partner of Produktívne.sk.</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>UPIM winners of the Best Student Project 1st place Ing. Vladimír Kračko</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>2nd place Bc. Filip Gaľgocí</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>Topic: Proposal of a more effective process of exchanging dies of vulcanizing presses by the SMED (Single Minute Exchange of Dies) method in ZF Boge Elastometall Slovakia, a.s., Trnava Supervisor: Ing. Juraj Draňovský, PhD.</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>3rd place Ing. Ján Juroš</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>Topic: Proposal of measures for modifying the layout of market warehouse in the production department of the passenger car clutches and dual-mass flywheels in ZF SACHS Slovakia, a.s. Supervisor: doc. Ing. Helena Vidová, PhD.</td>
</tr>
<tr>
<td>13/10/2014</td>
<td>The Best Student Project, finals of the competition co-organised by UPIM, as a partner of Produktívne.sk.</td>
</tr>
<tr>
<td>03/11/2014</td>
<td>Excursion of the UPIM staff and students in CHEMOSVIT FOLIE, a.s., Švít – connecting the theoretical knowledge acquired during the studies with practical short-term education in the conditions of industrial practice.</td>
</tr>
<tr>
<td>08 – 12/09/ 2014</td>
<td>Seminar on Social networks and social innovations – Luigi Telesca</td>
</tr>
<tr>
<td>29/9 – 02/12/2014</td>
<td>Erasmus mobility in Create-Net, Italy – Ing. Erika Pokorná, Supervisor: doc. Ing. Helena Vidová, PhD.</td>
</tr>
<tr>
<td>10 – 24/09/ 2014</td>
<td>Seminar on the Programme scheme of H2020 – dr. ing. Anna Saniuk, dr. hab. ing. Sebastian Saniuk, an STU MTF student won the 2nd place in the 55th year of the international Student Research Conference at the TU in Zvolen, Faculty of Wood Science and Engineering.</td>
</tr>
<tr>
<td>24/11/2014</td>
<td>Excursion of the UPIM staff and students to IKEA Industry Slovakia s. r. o. in Trnava, plant in Majcichov – connecting the theoretical knowledge acquired during the studies with practical short-term education in the conditions of industrial practice.</td>
</tr>
<tr>
<td>01/12/2014</td>
<td>doc. Mgr. Dagmar Čagáňová, CSc. was appointed the Director of UPIM; doc. Mgr. Dagmar Čagáňová, PhD., doc. Ing. Helena Makysía, PhD. and doc. Ing. Andrea Chlpeková, PhD., became members of the STU MTF Academic Senate.</td>
</tr>
<tr>
<td>03/12/2014</td>
<td>Excursion of the UPIM staff and students to Volkswagen Slovakia – connecting the theoretical knowledge acquired during the studies with practical short-term education in the conditions of industrial practice.</td>
</tr>
<tr>
<td>09 – 11/12/2014</td>
<td>Seminar – Social innovations, intellectual and social capital, doc. Mgr. Dagmar Čagáňová, PhD.</td>
</tr>
<tr>
<td>10 – 11/12/2014</td>
<td>Excursion of the UPIM staff and students to INA Kysuce, spol. s o.o. – Kysucké Nové Mesto and CEIT a.s. Žilina, – connecting the theoretical knowledge acquired during the studies with practical short-term education in the conditions of industrial practice.</td>
</tr>
<tr>
<td>26/11/2015</td>
<td>Meeting of the STU MTF Management and UPIM representatives with the representatives of BOSCH České Budejovice regarding the cooperation agreement.</td>
</tr>
</tbody>
</table>
The study programme is aimed at acquiring knowledge and skills in the field of engineering and management of industrial companies, particularly in the areas of company economics, company management, production management, personnel management, accountancy, decision-making, team work etc.

The education form is oriented on practical application of the acquired knowledge particularly on the level of the first-line and middle management in industrial companies.

The graduate of the Bachelor’s study programme “Industrial Management” understands the social-technology systems that integrate human resources, information, devices and processes in the complex life-cycle of products and services. S/he has mastered the knowledge of natural sciences, technology and human sciences as well as the fundamentals of informatics, environmental science and production quality, along with specific knowledge in the fields of industrial engineering and management focused on company economics, company management, production management, personnel management, accountancy, decision-making, team work etc. in practical applications.

The graduate of the Bachelor’s study programme of Industrial Management is able, in terms of sustainable development, to design, develop, implement and improve integrated systems including people, materials, information, equipment, energies and environment on the levels required for first-line and middle management. When dealing with the above-mentioned problems, s/he uses suitable analytical, computational and experimental methods.

The graduate of the Bachelor’s study programme of Industrial Management is prepared to perform managerial tasks such as planning, organising, leading and controlling in the fields of human resources, and finances, production, logistics, quality and maintenance.

Personnel Policy in Industrial Plant

The graduate will have gained an understanding of the strategy of personnel management and its connection with the theory and practice of market mechanics. The knowledge and skills gained, including computer literacy, will enable the effective management of human resources. The individual will be able to solve complex personnel problems regarding the requirements and economic, legal and moral restrictions on business. The graduate will successfully perform as a personnel or finance manager on various levels of management in large, medium-sized or smaller companies, in agencies and in both governmental/non-governmental and profit/non-profit organisations. The graduate will be well prepared to become a highly competent member of management in lower organisational structures, including the field of financial management.

MASTER’S PROGRAMME (Ing.)

Industrial Management

The study programme is aimed at acquiring the knowledge and skills in the field of industrial management and the management of industrial companies in particular. It is oriented on acquiring the knowledge and skills in the field of designing production systems and processes, production management, operational analysis, innovation, project and information management, modelling, simulation and the optimisation of processes and systems within the concept of sustainable corporate social responsibility with a specific focus on industrial companies. The teaching format is oriented on the practical application of the acquired knowledge at the levels of middle and top managements in industrial companies.

The graduate will gain a complete Master’s education in the study field of “Industrial Engineering” with the focus on planning, designing, implementing and managing industrial systems, and developing creativity in the field of the engineering works and processes design. S/he is able to integrate and optimise the company activities so that their output brings benefits in the form of high sustainable performance. His/her duties involve planning, designing, managing and implementing the complex production systems and the systems for providing high cost effectiveness, reliability, safety and management in the above-mentioned systems.
POSTGRADUATE PROGRAMME (PhD.)

Industrial Management

The Doctoral study programme in Industrial Management will provide students with education focused on mastering the research tasks in the key fields of management and industrial engineering, while focusing on the design of innovative procedures and products. The study programme is designed to develop student competences via contributing to the knowledge pool, innovations and design of new knowledge and procedures. Students will gain deep theoretical knowledge and methodology fundamentals which will enable them to conduct independent research based on the principles of sustainable development and ethics.

The study programme is aimed at collecting the knowledge and skills in the fields of industrial engineering and management, with orientation on the scientific and research methods in the given field (industrial engineering, management, economic sciences, research techniques, production design, economic systems and processes, intercultural management etc.).

LIST OF SUBJECTS OFFERED BY THE INSTITUTE

Accounting
Bachelor’s Project
Bachelor’s Thesis
Basics of Ergonomics
Basics of Quality Management
Business Economy Basics
Business Economy I, II
Business Strategies for Small and Medium-sized Enterprises
Calculation and Prices
Computer Aided Quality Management
Controlling
Customer Protection and Complaint Management
Designing and Management of Manufacturing Processes
Diploma Thesis
Dissertation Thesis I, II, III, IV, V, VI
Economy
Economy of Non-metallic Materials Production
Ergonomics
Exact Methods in Managerial Decision making
Financial and Investment Management
Financial Management
General Economic Theory
Gradual Project
Human Resource Management
Change Management
Industrial and Intellectual Property of the Firm
Information Management
Information Technologies II
Innovation Management
Integrated Management
Intercultural Management
Labour Rationalisation Basics
Logistics
Management
Management Basics
Management Information Systems
Management of Investment Progresses
Management of Projects
Market Research and Monitoring of Customer Satisfaction
Marketing
Marketing Management
Marketing Strategies
Monitoring of Customer Satisfaction
New Trends in Complex Quality Management
Operation and Maintenance of Machines
Operational Research
Pedagogical Activity I, II, III, IV, V, VI
Personnel Management
Production Management I, II
Professional Practice
Project and Process Management in Quality Management
Project Management
Project of Conformity Assessment
Quality Audits
Quality Management Case Studies
Research Thesis I, II, III, IV, V, VI, VII
Standardisation, Certification, Conformity Assessment
Statistical Methods
Statistical Methods in Process Improvement
Statistical Methods of Quality Control
Strategic Management
Tax Management
Tools and Techniques of Quality Management

GRADUATE THESES

List of theses contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

Master’s Theses
Roman Blažo: Proposal of the system of categorization and description of work positions in VACUUMSCHMELZE, s.r.o.
Debnárová, Lucia: Analysis and optimization of teamwork forms in the implementation of projects in Matador Holding, p.Lc.
Ján Škojec: Improvement proposals of material flow in ZLK company.
Molnár, Gabri: Proposals and evaluation of indicators for measuring of effectivity of education Hella Slovakia Front-Lighting, Ltd.
Schiffel, Lukáš: Draft for the application of sustainable human resource management in Nestlé Slovakia s.r.o. in the context of the creation of sustainable shared values.
Krajčo, Vladimir: The proposal of effective assembly process at the assembly workplace VS 20 by means of analysis MTM UAS in the company ZF Boge Elastometal Slovakia, a.s., Trnava
Kollárková, Monika: Ergonomic streamline the process of manual handling and arrangement of selected departments in company STREIT TRNAVA s.r.o.
Micháliková, Monika: Proposal for the implementation of environmental management system in the company AKATECH Kabelkonfektionierung GmbH, Hlohovec
Lenický, Miroš: The proposal for the implementation of quality management in Nestlé Slovakia s.r.o. in the context of sustainable development and socially sustainable and responsible business

Vychopenová, Dominika: Proposal the innovation of the marketing mix products in the company I.M.D.K. BA, s. r. o. in the context of sustainable development and socially sustainable and responsible business
Herger, Roman: Devising a marketing strategy in industrial company HKS Forge, LLC, Trnava
Plaščiaková, Veronika: Measuring and evaluating of the work performance in a company PIVOT+QARI, spol. s r. o.
Barší, Radoslav: Proposal for a methodology for the monitoring and management of receivables venture in VETROPACK NEMŠOVÁ s.r.o.
Kováč, Peter: Proposal of Model of Financial Planning in the Industrial Company
Choduřová, Monika: Proposal for improvement of cost system in the company Senapo Ltd.
Turančíková, Barbora: Proposal for improving the material flow of company BOHÚŠ s.r.o., Zavodná nad Hornom
Buday, Michal: Proposal to improve the processes of corporate planning and budgets of selected centers in industrial company
Matonok, Lenka: Proposal for improve creating calculations in company Jaroslav Beneš - ZERAVY, Banská Bystrica
Rosa, Pavol: Proposal to Improve the Stock and Storckholding in Plant Continental Matador Truck Tires s r.o., Púchov
Kabát, Lubomír: The proposal to streamlining processes of bonding and tinning in company VACUUMSCHMELZE, s. r. o., Horná Streda
Juroš, Ján: Proposed Measures For Advanced of Retyping of Vulcanising Press Using SMED Methodology in ZF Boge Elastmetall Slovakia, a.s., Trnava
Poláček, Ivan: Proposal for streamlining 100% checking for Sentosetrelager - shaft in the enterprise IRA SKALICA spol. s r.o.
Jakube, Luboš: The proposal for improvements to the measurement and evaluation of employees’ performance in the company Knott
Blahutová, Michaela: Proposal to improve the processes in the company Inalfa Roof Systems Slovakia s.r.o.
Čulák, Milan: Proposal to improve the project management process from the parent undertaking to the subsidiary companies
Lamanec, Miroslav: Proposal to improve the process of creation and approval of calculations in the enterprise Management and Maintenance of roads in Trnava region
Brošiová, Kristina: Proposals for improving human resource management in company POSS-SLPC, Ltd.
Kvasnicová, Katarína: Proposal to improve human resource management system in the chosen company.
Školárová, Zuzana: Proposal to improve managers training and their development in selected industrial enterprise
Sabová, Dominika: Suggestion to improve the application of quality management principles in the process of project management
Lošinská, Monika: Proposal of decrease the cost for rubber-metal part production and scrap in company ZF Boge Elastmetall Slovakia, a.s.
Kuzmová, Lenka: The proposal to reduce costs in the company Faurecia Slovakia s.r.o.
Blaho, Martin: Proposal of manufacturing expenses reduction by implementing technological innovations of manufacturing processes in the filling production division of the L.D.C Holding, a.s., branch Pečivárna Sereď
Holovčiţová, Katarína: Proposal for increasing of efficiency on manufacturing line within company L.D.C. Holding, PLC, branch Figaro Trnava
Kolesárová, Karin: Proposal to increase the technical usability of the assembly line Renault / Dacia using the Andon system in the company ZF Boge Elastmetall Slovakia, a.s., Trnava
Slobodová, Emilija: Proposal current marketing communication tools to improve brand awareness COLOR Company Ltd. in the context of sustainable development and sustainable corporate social responsibility
Macko, Stanislav: Proposal for optimized transport system of the transported boxes in the company PCA Slovakia, s. r. o., Trnava
Bajkai, Ľudovít: Proposal of organization and maintenance management system of railway wagon
Sedláková, Dominika: Proposal of personal development of employees at CIP department in Magna Slovteca corporation, s.r.o., a.s. Magna Trnava
Kuricová, Radka: A Proposal of financial sources evaluation procedures during acquisition of tangible investment goods in company BC LOGISTICS Ltd., Trnava
Hrachová, Simona: The proposal of creation process and evaluation of investment intentions in the company
Horňáková, Mária: Design for implementation of procedural approach to the area of human resources in Silocelec Europe (SK), s. r. o. Komárno
Hrašková, Katarína: Proposals process of education of employees in the context of USIP in the company Continental Automotive Systems Slovakia s.r.o.
Pitkáková, Petra: Proposal of adaptations program for selected groups of staff in the company Danfoss Power Solutions Inc.
Štefančíková, Monika: Recommendation rationalization of supply and storage in logistics organization
Sivá, Marek: The proposal of the solution for the ergonomic rationalization CPL department in the company PCA Slovakia, s. r. o., Trnava
Lány, Miroslav: The suggestion of ergonomic rationalization in company KOVOSPOL Ltd. Liptovský Hrádok
Demian, Matúš: Proposal to address rationalization in selected business operations in Železizare Podbrezová a. s.
Žigová, Martina: Suggestion for ergonomic rationalization in chosen operations of JASPLASTIK-SK spol. s r.o. company in Galanta
Hajčková, Miroslava: The proposal to streamline the operation of glucose line in company AMILYUM SLOVAKIA spol. s r.o.
Straka, Marek: Solution proposal to streamline operation of the production line full bowl pump PKW torque converter, through selected lean methods in the company
Vršblová, Martina: Proposal for solving on how to make manipulation with tyres more effective in warehouse with finished products in Continental Matador Rubber, s. r. o.
Kázmerová, Veronika: Solution proposal to streamline the process of selecting and evaluating suppliers inventory management and inter area transport company ZVS a.s.
Benedikovičová, Lenka: The proposal of solution to improve the project management of changes in an industrial enterprise
Hudáková, Daniela: Proposal of solution for continue of ergonomic programme in chosen facilities of company Johnson Controls International, spol. s r.o. – OZ
Zajčková, Ivana: Proposal to improve the measurement and management of employee performance
Fejesová, Viktória: Proposal for systemic changes to improve the project management in the company PPS Group, a.s.
Bláz, Roman: Proposal for the classification and description of job positions in company Vacuumschmelze, s.r.o.
Bucha, Pavol: Proposal of motivational system aimed at sustainable performance of employees of company METALPORT Ltd.
Spišáková, Alžbeta: System proposal of the motivation for employees over 45 years, in the terms of the industrial enterprises
Fulek, Roman: Proposal of succession system in condition of ZÖS Trnava, a.s.
Štangová, Miroslava: Proposal for the remuneration of work motivation accepting procedure ZOŠ Trnava, a.s.
Zoubaliová, Zuzana: System design receiving and release of employees in a company PPS Production, s.r.o.
Janík, Noemí: Proposal for a system of recruitment and release of employees in the company SAM - SHIPBUILDING AND MACHINERY a.s.
Kubašová, Mária: Design of the career management staff with a focus on succession in selected industrial enterprise
Štínišová, Martina: Motion of stabilization system production staff through the processes of human resource management in the business enterprise Hormonitranske bane Prievidza, a. s.
Zígová, Ivana: The design of production staff stabilization system in Matador Industries, Inc. Dubnica nad Váhom
Ištvánová, Martina: The Introduction of talent management in terms of selected Industrial Company
Karnasová, Hana: Proposal of the system for recruitment and selection process in company FARMA MAJICHOV, a.s.
Szalayová, Eva: Implementation of recruitment and selection of employees system in a Vaillant Industrial Slovakia s.r.o.
Rumlérová, Lucia: Proposal for a sustainable system of cooperation with external recruitment agencies in conditions of FINE DNC Slovakia, s.r.o.
Kunovská, Patrícia: Proposal to using product design as a tool of marketing mix in the company Emerson a.s., Nové Mesto nad Váhom
Dedíková, Kristina: Design of using marketing tools in system of handling in production company HPM Therm s r.o., Moravské Lieskove
Pazínová, Jozefina: Application of AHP method and software Expert Choice for waste minimization in the packaging process in manufacturer company PSS SVÍDNÍK a.s.
Schiffel, Matúš: The proposal of using AHP method to determine the competency profile manager company PCA Slovakia, s.r.o in the context of SD and SCSR
Sujaková, Monika: The proposal of using AHP method for determine of worker competency profile of UPIM MTF STU Trnava
Mahajová, Mária: The suggestion of utilization of modern methods during an evaluation of efficiency in the company Slovenské elektrárne, a. s.
Babišová, Monika: The Proposal for the Corporate Social Responsibility – objective sustainability strategy in company ŽOS Trnava, a.c.
Pilch, Peter: Proposal use of sustainable marketing in creating a positive image as in the context of the strategy for sustainable corporate social responsibility of the company Slovenske elektrarny, a. s.
Antal, Andrej: Proposal of intercultural management improvement in industrial companies in Slovakia
Bajcar, Marcel: The Proposal to Improve the Corporate Culture of the Company TOMRA Sorting, Ltd.
Škojec, Ján: Improvement of proposals material flow in ZĽK company.
Blazek, Miloš: Proposal for Improving Warehousing Material Flow in ZOS Trnava, OJSC
Janičková, Miroslava: Proposal for improving the corporate culture of Kellers Bicycles Ltd.
Badurová, Lenka: Proposal for improving the corporate culture of Silgan Metal Packaging and Nowe Mesto a.s.
Dužková, Martina: System design improvement of corporate culture in terms of Matador Industries, a.s.
Šímová, Petra: Proposal for improving inventory and warehouse management in the company DUSLO, a.s. Saľa
Jakubiecová, Silvia: Proposal for improving the system of further education of employees in the company Slovacart, Bratislava
Pastýrí, Andréj: Proposal for improvement of financial-economic analysis of the company SAM-SHIPBUILDING AND MACHINERY a.s., Bratislava
Borovský, Jozef: Proposal for Improving Remuneration System of Employees in Company HF NAJUS, a.s. DUBNICA NAD VÁHOM
Kubovcová, Barbara: Proposal for Improving System Performance Management in Industrial Plant
Beliová, Miroslava: Proposal to improve management system of employees in the company Bekaert Hlohovec, a.s.
Petraš, Erik: Proposal improving the system of maintenance and repairs in the company Železničná spoločnosť Slovensko, a.s.
Kovač, Vladimír: Proposal for improving the efficiency of supply and warehousing activities in the company Brovdatam Slovakia, s. r. o., Galanta
Brizlák, Miroslav: The proposal to streamline the processes reverse logistics in the context of sustainable development in an industrial undertaking BROVEDANI SLOVAKIA, s.r.o.
Moncmanová, Natália: Proposal to streamline reverse logistics processes in the context of sustainable development in industrial company Foxconn Slovakia, s.r.o.
Eliaš, Peter: Concept of a better effectiveness of the production planning system for products Daimler 251/252 in ZF Boge Elastmetall Slovakia, a.s.
Beáta Živčíková: Návrh zefektívnenia systému pracovnej motívácie zamestnancov v podniku Scheidt & Bachmann Slovensko s. r. o.
Šimlažtík, Marek: The proposal to reengineer the management and processing system of receivables in the company Duslo, a.s., Saľa
Tarišková, Zuzana: Design efficient repairs and maintenance system in SES a.s., Timače
Huduličková, Kristína: Proposal to streamline or supply the production lines with packing material in the company Foxconn Slovakia, spol. s r.o.
Schrámko, Kristián: Suggestions of improvements of the internal directives in areas of accounting
Bordášková, Katarína: Proposal of improvements in the sphere of monitoring and claim management in Tatrachema company
Mediánská, Barbora: Proposal to improve the adaptation process of manufacturing employees in MAGNA SLOVTECA, Ltd.
Pavlovcová, Monika: The proposal an improvement in measuring and evaluating employee performance in the production department of Magna Slovteca Inc., c.a. Magna Trnava enterprise
Jakabovičová, Dagmar: Suggest the improvements of the workers adaptability in the company ZF Boge Elastmetall Slovakia, a.s.
Stanková, Ivetta: Proposal for improvement of quality management system in the enterprise GEWS Slovakia s.r.o., Prievídza
Kružiaková, Viera: Suggestion for the improvement of quality management system in the company HELLA Innenleuchten-Systeme Bratislava, s.r.o.
Novák, Jozef: Proposal for improving the employees rewarding system in relation to the performance in the company PROTERM PRODUCTION s.r.o., Škalka
Rokozová, Beáta: Proposal to improve the system of management and performance evaluation of employees in the company SILCOTEC EUROPE (SK), ltd.
Fatranská, Andrea: Talent improvement system proposal in the conditions of Bekaert Hlohovec, a.s.
Farkasová, Denisa: Suggestion on improving the system of employee performance management in the company Hornlein, k.s.
Dóza, Peter: Proposal for improving talent management system in terms of MATADOR HOLDING, Inc.
Králíčková, Katarína: A Suggestion for Improvements in the Areas of Tax and Accounting Aspects of the Profit Or Loss Before Taxing in a Chosen Industrial Establishment
Klokné, Marek: Proposal for improving the performance of project managers in industrial companies in Slovakia
Barter, Peter: Proposal for reducing the setup time on the production line rotors in the company Askoll Slovakia Ltd. using the method SMED
Mikuš, Ondrej: Proposal for increasing the efficiency of material flow in the company Bonfiglioli Slovakia Ltd. using the VSM method
Lackovič, Michal: Optimization of manual handling of loads by using the selected methods for the assessment of physical load in selected workplaces in the company Bekaert Hlohovec, a.s.
Horňíková, Renáta: Optimization of the flow of invoices within the group of PSA companies in Slovakia, the Czech Republic, and Hungary
Veselková, Andrea: Rationalization of physical load and energy expenditure of employees selected workplace with using the software support 3D SSSP in company ZF SACHS Slovakia, a.s.
Horváth, Luboš: System proposal of modernization of the production line at the company Vino Matyšák Ltd.
Tóth, Attila: Proposal of improvement of the environmental management system in Silcotec Europe (SK), s.r.o.
GRULIŠOVÁ, Lucia: Increase the effectiveness of the environmental management system in the company HELLA Slovakia Signal-Lighting s.r.o.

PhD Theses
Körtiš, Marián: Analysis of the impact of cost externalization multinational corporations to SMEs in the economy and to suggest recommendations for sustainable use of CAP to solve them
Mazelle, Max: Entwicklung und Darstellung eines allgemeinen Modells zur Implementierung von Innovationsmanagement Ansätzen der Öffentlichen Verwaltung in Industrieunternehmen /Developing an innovation management model of public administration and its implementation in industrial enterprises
Friedrich, Stefan Markus: Proposal introducing instruments for controlling in public education
Trömmer, Marc Sven: Proposal for a methodology of determining the reduction in the market value of fixed assets
Lach, Manfred: Proposal for global engineering principles in local conditions its applications under local conditions
Holeček, Jaroslav: Management interculturality as the enterprise performance factor
Ladvenicová, Katarína: Proposal of methodology for the application of competency model in terms of medium-sized industrial enterprises
Videnová, Veronika: Proposal methodology for resolving conflicts within multicultural teams in industrial enterprises
Beluský, Martin: Suggestion of operation scheduling process optimization in higher types of production

Areas of Research
- Progressive approaches in the area of the Organizational Management,
- Progressive approaches in the area of the Organizational Management,
- Financial Management,
- Corporate Culture,
- Knowledge Management,
- Multicultural Management,
- Corporate Social Responsibility,
- Gender Diversity in Industrial Enterprises and Research Institutions,
- Human Resources Management,
- Information Quality,
- Development of Managerial Competences,
- Project Management,
- Ergonomics,
- Green Management,
- Future factory – Digital Factory,
- Production Management,
- Operations Research,
- Lean Management.
Research characteristics
The Institute of Industrial Engineering, Management and Quality has wide scientific cooperation with foreign universities: Leeds University Business School, UK; Czestochowa University of Technology, Poland; University of Zielona Gora, Poland, Technical University Ostrava, Czech Republic; Tomas Bata University in Zlin, Czech Republic; University of Iowa, USA; The "Gheorghe Asachi" Technical University of Iasi, Romania; University of Gabrovo, Bulgaria; Ufa State Aviation Technological University, Russian Federation; Ihevisk State Technical University, Russian Federation. The cooperation is focused on the organisation of conferences, the preparation of international projects, studies visits, common publications and lectures. During the last years, the Institute has also extended its cooperation with domestic and foreign industrial enterprises and organisations: Create-Net Italy, West-Panon Regional Development Company, Automotive Cluster Croatia, Automotive Cluster of Slovenia, Automotive Cluster Serbia, Automotive Cluster – Vienna Region, European Alliance for Innovation, VW Slovakia, PSA Peugeot Citroen Trnava, KIA Motors Slovakia, Johns Manville Slovakia. The cooperation is focused on study visits, diploma thesis, training and participation in international projects.

The research areas comprises human resources management, operations research, logistics, innovation management, information management, financial management, project management, quality management, production management with the special emphasis on competencies models, IFRS, creative accounting, financial management of the holding company, financial analysis of enterprise and holding, knowledge management, multicultural management, quality, corporate social responsibility, green management, ergonomics and lean management.

Areas of expertise
- Innovation Management
- Intercultural Management
- ergonomics, Ergonomic Programmes
- Human Resources
- Corporate Culture
- Development of Managerial Competencies
- Corporate Social Responsibility and Sustainable Development
- Systems of Quality Management
- Gender Diversity in research and management
- Project Management
- Logistics, Lean Management
- Innovation Management
- Future Factory – Digital Factory
- Information and Knowledge Management
- Financial Management
- Operations Research
- Production Management

PROJECTS OF THE INSTITUTE

INTERNATIONAL PROJECTS

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Coordinator</th>
<th>Start Date</th>
<th>End Date</th>
<th>Programme</th>
<th>Annotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Festival of Science as a Platform for Intensifying Cooperation between V4 Region Universities</td>
<td>doc. Mgr. Dagmar Cagáňová, PhD.</td>
<td>01/03/2013</td>
<td>31/08/2014</td>
<td>International Visegrad Fund</td>
<td>The main project feature is to establish a basis for active V4 scientific cooperation using best practice exchange and knowledge transfer. It is an opportunity for linking academic and business institutions from V4 countries that will ensure collaboration in research, education and increased international mobility of university teachers and students. It will also contribute to the popularisation of science for professionals and public and ensure continuation of activities to the future.</td>
</tr>
<tr>
<td>Knowledge exchange in the framework of alternative economic systems for the promotion of sustainable regional development</td>
<td>doc. Mgr. Dagmar Cagáňová, PhD.</td>
<td>01/09/2013</td>
<td>31/12/2014</td>
<td>European Territorial Co-operation (ETC) Slovak Republic – Austria</td>
<td>The project ALTECS is implemented by the Vienna University of Economics and Business, the Slovak University of Technology in Bratislava, the Ministry of Life, the Vienna Chamber of Commerce and Industry, and the Slovak Chamber of Commerce and Industry Trnava in the framework of the funding programme European Territorial Co-operation (ETC) Slovak Republic – Austria. The objective of the ALTECS project is to set the first steps for a sustainable regional development based on knowledge exchange between companies and students and using knowledge to pursue and implement a responsible and resource conserving economic way. In order to advance ecological, economic, and social sustainability, regional know-how founded on the important pillars science and economy and generated among the involved target groups in the context of a summer university is made available. The realisation of the summer university will be designed together with the &quot;ÖdA-WohnraumverwaltungsGmbh&quot; as the initiator and implementing body of this educational method. In this regard, those companies shall be supported that wish to follow a socially, ecologically, and economically exemplary pattern or already represent best practice and can thus give valuable advice. Economy students from Austria and the Slovak Republic will be involved from the sector of science. They will enlarge and also share their knowledge in the field of sustainability in order to elaborate new perspectives for sustainable regional development in the framework of peer group projects together with small and medium-sized enterprises (SMEs). Long-term orientation as an essential indicator of sustainability is achieved in the establishment of a regular platform and network events that will simultaneously accelerate knowledge exchange. The shared set-up and the realisation of the educational programme also fosters relations with the neighbouring country (cultural, economic, ecological, and social) as well as solidarity in the border region and promotes a common responsibility for the cross-border economic area.</td>
</tr>
<tr>
<td>EAI SK European Alliance for Innovation Slovakia</td>
<td>doc. Mgr. Dagmar Cagáňová, PhD.</td>
<td>01/03/2014</td>
<td>30/09/2015</td>
<td>International Collaboration</td>
<td>The main goals of the project are as follows:</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Annotation</td>
<td>Goal 1 Improvement of the automatic web tools to support the convergence of EAI online tools and services supporting the organization of events and publications release.</td>
</tr>
</tbody>
</table>
Goal 2
Utilisation of the web tools to promote entrepreneurs, start-ups and small and medium enterprises through the EAI services
Promotion and presentation of the best innovative products/prototypes and start-ups through the EAI tools and communities
Increase of the productivity through the transfer of technology and research results

Goal 3
Motivation of the users through the building of the thematic groups and forums with the emphasis on the selected innovation themes

Project beneficiaries
- Access to the EAI communities activities
- Connection to influential innovation stakeholders
- Participation in EAI international projects and activities including Horizon 2020 projects
- Fostering of the technology transfer and research results
- Access to the EAI know-how in the area of the ICT tools for the community building, event organisation, innovation evaluation and promotion
- Access to funding opportunities for start-ups and spinoffs
- Access to the EAI expertise in development and submission of international projects
- Promotion and international visibility of the Slovak University of Technologies

NATIONAL PROJECTS

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Identification of key parameters of sustainable performance of industrial companies under the conditions of a multicultural environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Prof. Ing. Miloslav Čambál, CSc.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2012</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2014</td>
</tr>
<tr>
<td>Programme</td>
<td>VEGA</td>
</tr>
<tr>
<td>Annotation</td>
<td>This project investigates the approaches to organisation performance management in terms of performance sustainability. The emphasis is on &quot;sustainability&quot;, since currently used models of performance management have a detrimental impact on the decisive groups of employees (long-time over-loading, burnout syndrome, health troubles of various character), decreased their performance and thus also performance of the whole organisation and its competitiveness. The project is aimed at solving the subject under the specific conditions of multicultural organisations (with orientation on industrial companies), requiring the approaches different from those applied in monocultural organisations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Information Quality Management in Project Management of Industrial Companies in SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>doc. Ing. Jana Šujanová, CSc.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2012</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2014</td>
</tr>
<tr>
<td>Programme</td>
<td>VEGA</td>
</tr>
<tr>
<td>Annotation</td>
<td>The project focuses on the results of the projects worked on in the Institute of Industrial Engineering, Management and Quality of STU MTF in Trnava: VEGA 1/2578/05: Analysis of current world-wide trends of project management, research of current state of the subject in Slovakia and a proposal of its implementation in the conditions of Slovakia; ESF 1123022091: Modular system of distant education in project management with elearning and information technologies support; VEGA 1/0491/09: Maturity inspection of project management processes as a tool of increasing competitiveness of industrial companies. Partial outcome of the above-mentioned projects was the identification of shortcomings in the field of information and information management quality, negatively influencing the projects' impact. The project aim is to design a methodology of information quality management in project management of industrial companies in SR.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Implementation of the subject &quot;Corporate Social Responsibility Entrepreneurship&quot; into the Master’s study programme Industrial Management at MTF STU Trnava</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Prof. Ing. Peter Sakál, CSc.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01.01.2012</td>
</tr>
<tr>
<td>End Date</td>
<td>31.12.2014</td>
</tr>
<tr>
<td>Programme</td>
<td>KEGA</td>
</tr>
<tr>
<td>Annotation</td>
<td>The content of the project concerns the implementation of the subject &quot;Corporate Social Responsibility Entrepreneurship&quot; into the study programme Industrial Management in context of the strategy of corporate social sustainable development of the EU. Firstly accepted in Gothenburg in 2001 and consequently revised in 2006 and 2009. The strategies include, Europe 2020 for Employment and Growth, Enterprise 2020, key findings from the council meeting on 19th November, 2010 about education for sustainable development (2010/C 327/05), and also from the Organisation of United Nations (OSUN) summit from 20th22nd September, 2010 regarding the millennium development aims and the present accepted norms. The project also considers ISO 26000 relating to corporate social responsible entrepreneurship</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Transformation of the ergonomics programme into the company management structure through integration and utilisation of QMS, EMS, HSMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Prof. Ing. Jozef Sablik, CSc.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2013</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2015</td>
</tr>
<tr>
<td>Programme</td>
<td>VEGA</td>
</tr>
<tr>
<td>Annotation</td>
<td>The project is aimed to confirm the need, definition of the possibilities and proposal of the process using an integrated QMS/EMS/HSMS for transformation of the content of the ergonomic programme into structured activities of management for the company. Application of the project outputs envisages the creation of conditions that improve the work process, which guarantee a long term high level of work performance with minimal risk to safety and health of employees in accordance with the philosophy of sustainable development.</td>
</tr>
</tbody>
</table>

Goal 2
Utilisation of the web tools to promote entrepreneurs, start-ups and small and medium enterprises through the EAI services
Promotion and presentation of the best innovative products/prototypes and start-ups through the EAI tools and communities
Increase of the productivity through the transfer of technology and research results

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Project beneficiaries
- Access to the EAI communities activities
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- Access to funding opportunities for start-ups and spinoffs
- Access to the EAI expertise in development and submission of international projects
- Promotion and international visibility of the Slovak University of Technologies
Project Title: Centre for Competence Development in Industrial Engineering and Management
Start Date: 01/10/2013
End Date: 30/09/2015
Programme: The European Social Fund
Annotation: The Centre for competence development in the field of Industrial Engineering and Management, will focus on supporting the development of human potential in research and innovation in industrial engineering and management, in particular through post-graduate studies and training of researchers and experts from industrial practice, which will also contribute to linking the activities of universities, research centres and companies to the networks.

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

<table>
<thead>
<tr>
<th>Country</th>
<th>Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>Cagáňová Dagmar, doc. Mgr., PhD.</td>
</tr>
<tr>
<td></td>
<td>Šujanová Jana, doc. Ing., CSc.</td>
</tr>
<tr>
<td>Czech</td>
<td>Befo Rastislav, Ing., PhD.</td>
</tr>
<tr>
<td>Republic</td>
<td>Fidlerová Helena, Ing., PhD.</td>
</tr>
<tr>
<td></td>
<td>Makyslová Helena, doc. Ing., PhD.</td>
</tr>
<tr>
<td></td>
<td>Sablik Jozef, Prof. Ing., CSc.</td>
</tr>
<tr>
<td></td>
<td>Čambál Miloš, Prof. Ing., CSc.</td>
</tr>
<tr>
<td>Denmark</td>
<td>Gyrák Babaľová Zdenka, Ing., PhD.</td>
</tr>
<tr>
<td></td>
<td>Samáková Jana, Ing., PhD.</td>
</tr>
<tr>
<td>Cuba</td>
<td>Cagáňová Dagmar, doc. Mgr., PhD.</td>
</tr>
<tr>
<td>Germany</td>
<td>Cagáňová Dagmar, doc. Mgr., PhD.</td>
</tr>
<tr>
<td></td>
<td>Šujanová Jana, doc. Ing., CSc.</td>
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<tr>
<td></td>
<td>Čambál Miloš, Prof. Ing., CSc.</td>
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<td></td>
<td>Makyslová Helena, doc. Ing., PhD.</td>
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<tr>
<td>Poland</td>
<td>Cagáňová Dagmar, doc. Mgr., PhD.</td>
</tr>
<tr>
<td></td>
<td>Čambál Miloš, Prof. Ing., CSc.</td>
</tr>
<tr>
<td></td>
<td>Makyslová Helena, doc. Ing., PhD.</td>
</tr>
<tr>
<td>Austria</td>
<td>Cagáňová Dagmar, doc. Mgr., PhD.</td>
</tr>
<tr>
<td></td>
<td>Chlpeková Andrea, doc. Ing., PhD.</td>
</tr>
<tr>
<td></td>
<td>Gyrák Babaľová Zdenka, Ing., PhD.</td>
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<tr>
<td></td>
<td>Koltnrová Kristina, Ing., PhD.</td>
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<tr>
<td></td>
<td>Samáková Jana, Ing., PhD.</td>
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<tr>
<td></td>
<td>Šrubáľová Ružena, Ing., PhD.</td>
</tr>
<tr>
<td></td>
<td>Váňová Jarmiška, doc. Ing., PhD.</td>
</tr>
<tr>
<td>Russia</td>
<td>Sakáš Peter, Prof. Ing., CSc.</td>
</tr>
<tr>
<td>Italy</td>
<td>Cagáňová Dagmar, doc. Mgr., PhD.</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>Šujanová Jana, doc. Ing., CSc.</td>
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<tr>
<td></td>
<td>Zvonár Tibor, Ing.</td>
</tr>
</tbody>
</table>

MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS

European Alliance for Innovation (EAI)
doc. Mgr. Dagmar Cagáňová, PhD.
Prof. Ing. Miloš Čambáš, CSc.
doc. Ing. Jana Šujanová, CSc.

E-COST: European Collaboration in Science and Technology (Európska spolupráca v oblasti vedy a techniky) TN 1301 Sci Generation Management Committee Member
doc. Mgr. Dagmar Cagáňová, PhD.

Danube Academic Confederation (DAC)
doc. Mgr. Dagmar Cagáňová, PhD.
doc. Ing. Jana Šujanová, CSc.

WoodEMA, a. i.
doc. Ing. Jana Šujanová, CSc.
Ing. Jana Šujanová, CSc.

International Coaching Federation
Prof. Ing. Miloš Čambáš, CSc.

ACM (Association for Computing Machinery)
doc. Ing. Jana Šujanová, CSc.
doc. Mgr. Dagmar Cagáňová, PhD.

Czech Pedagogical Society – Citizens Association
doc. Mgr. Dagmar Cagáňová, PhD.

CASAJC-Czech and Slovak Association of Teachers of Foreign Language at Universities
doc. Mgr. Dagmar Cagáňová, PhD.
Asian School of Management and Technology
doc. Ing. Helena Vidová, PhD.

European Society for Engineering Education (SEFI)
doc. Mgr. Dagmar Cagáňová, PhD.
Prof. Ing. Miloš Čambáš, CSc.

European Association for Education in Electrical and Information Engineering (EAEIE)
Prof. Ing. Miloš Čambáš, CSc.
doc. Mgr. Dagmar Cagáňová, PhD.

European Platform of Women Scientists (EPWS)
doc. Mgr. Dagmar Cagáňová, PhD.

Czech Society for Operations Research
Ing. Henrieta Hrablič Chovanová, PhD.

International Academic Network „Human Potential Development in Central and Eastern EU States”
Prof. Ing. Miloš Čambáš, CSc.
doc. Mgr. Dagmar Cagáňová, PhD.
doc. Ing. Jana Šujanová, CSc.
Ing. Zdenka Gýrak Bablyová, PhD.

Polish Scientific Society of Marketing
Ing. Helena Fidlerová, PhD.

International Association of Engineers (IAENG)
Ing. Helena Fidlerová, PhD.

MEMBERSHIP OF EXPERT GROUPS

Expert group for the popularisation of Universities as engines for development of knowledge society – University students into practice
doc. Mgr. Dagmar Cagáňová, PhD.

National management committee for priority area 7 EU strategies for the Danube region: Knowledge society
doc. Mgr. Dagmar Cagáňová, PhD.
MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS

Slovak Academy of Management  
Prof. Ing. Miloslav Čambáš, PhD.  
Ing. Marta Kučerová, PhD.  
Ing. Miroslava Mlčka, PhD.  
doc. Ing. Jaromíra Vahová, PhD.

European Alliance for Innovation Slovakia (EAI SK)  
doc. Mgr. Dagmar Cagáňová, PhD.  
Prof. Ing. Miloslav Čambáš, PhD.  
doc. Ing. Jana Šujanová, CSc.  
Ing. Tibor Zvonár  
MSc. Paul Woolliscroft  
Ing. Erika Pokorná  
Ing. Rastislav Petráš

Project Management Society  
Prof. Ing. Miloslav Čambáš, PhD.  
Ing. Henrieta Hrablik Chovanová, PhD.  
Ing. Martina Jakábová, PhD.  
Ing. Ružena Šrubařová, PhD.

Slovak Ergonomics Society  
Ing. Rastislav Berho, PhD.  
doc. Ing. Karol Hatiar, PhD.  
doc. Ing. Andrea Chlpeková, PhD.  
Prof. Ing. Jozef Sablík, PhD.

Association of Management Training and Development  
prof. Ing. Miloslav Čambáš, PhD.  
doc. Ing. Andrea Chlpeková, PhD.

District Council for Professional Education and Preparation TTSK  
doc. Ing. František Horňák, PhD.

Committee for Scientific Management ZSVTS  
Prof. Ing. Miloslav Čambáš, PhD.  
Ing. Marta Kučerová, PhD.  
Ing. Miroslava Mlčka, PhD.  
doc. Ing. Jaromíra Vahová, PhD.

Association of Institutes for Adult Education (AIVD)  
Ing. Zdenka Guyrák Bábeľová, PhD.  
Ing. Zuzana Lenhardtová, PhD.

Slovak Anthropological Society  
doc. Ing. Karol Hatiar, PhD.

Slovak Association of Finance and Treasury  
doc. Ing. Jana Šnircová, PhD.

Automotive Industry Association  
Ing. Jaroslav Holeček, PhD.

Republic Union of Employers  
Ing. Jaroslav Holeček, PhD.

Slovak Chamber of Commerce and Industry  
Ing. Jaroslav Holeček, PhD.

Government Council for Education  
Ing. Jaroslav Holeček, PhD.

Government Accreditation Committee  
Ing. Jaroslav Holeček, PhD.

Slovak Chamber of Auditors (SKAU)  
Ing. Martina Horváthová, PhD.

Slovak Chamber of Teachers  
Ing. Henrieta Hrablik Chovanová, PhD.  
Ing. Dagmar Babčanová, PhD.

Best Practice User Group Slovakia  
Ing. Martina Jakábová, PhD.

Project Management Organisation of Slovakia  
Ing. Ružena Šrubařová, PhD.

The Slovak Association of Business Process Management  
Ing. Miroslava Mlčka, PhD.  
Prof. Ing. Peter Sakál, PhD.  
Ing. Helena Fidlerová, PhD.  
doc. Ing. Jaromíra Vahová, PhD.

Membership in Evaluation Committees (VEGA, KEGA, APVV, SAIA, EU Structural Funds)  
Ing. Zdenka Guyrák Bábeľová, PhD.  
doc. Mgr. Dagmar Cagáňová, PhD.  
Prof. Ing. Miloslav Čambáš, PhD.  
Ing. Martina Jakábová, PhD.  
doc. Ing. Jana Šujanová, CSc.  
doc. Ing. Helena Vidová – Makýiová, PhD.

PUBLICATIONS (MOST IMPORTANT PUBLICATIONS IN 2014)

List of publications contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.


This part of Annual Report 2014 was verified by Prof. Ing. Miloslav Čambáš, CSc. and doc. Ing. Jana Šujanová, CSc.
INSTITUTE OF APPLIED INFORMATICS, AUTOMATION AND MATHEMATICS

CONTACT

Director Prof. Ing. Pavol Tanuška, PhD.
e-mail: pavol.tanuska@stuba.sk
tel.: +421918646061

Address Hajdóczyho 1, 917 24 Trnava,
Slovak Republic
tel.: +421918646021

STAFF

- Professors: 5
- Assoc. Professors: 8
- Senior Lecturers: 18
- Research Fellows: 4
- PhD Students: 25

EDUCATION AT THE INSTITUTE

Number of students (at 30/10/2014) registered on study programmes offered by the Institute: 468
Number of students graduated in the academic year 2013/2014 from the study programmes offered by the Institute: 154

STUDY PROGRAMMES

- Applied Informatics and Automation in Industry
- Process Automation and ICT Implementation in Industry
- Process Automation and ICT Implementation
The graduate will be aware of the social, moral, legal and economic contexts of the profession in accordance with professional, ethical and legal frameworks applicable to the area of applied information technologies and automation. The graduate will be well prepared for an immediate entry into the labour market as well as for post-graduate study in order to further develop their scientific potential in information technologies and automation. The graduate will be able to successfully perform not only in the design and operation of information and control systems in industrial plants, but also in the design or consultancy offices for institutions, information, management and telecommunications systems, software engineering, as well as in schools in educational institutions.

MASTER’S PROGRAMME (Ing.)

Process Automation and ICT Implementation in Industry

After completion of the course the graduate will have acquired extensive knowledge of theoretical and applied scientific disciplines necessary to understand patterns during the physical, technological, informatics, automation and control processes in industrial companies and organisations, even at the description level of abstract models. The graduate will master basic technological processes of industrial production and the structure of manufacturing. This knowledge will allow the individual to design systems and ways of automated control and information support, with design consideration given with regard to environmental and ecological aspects. The graduate will also develop knowledge of data acquiring techniques, data processes and data transmission from the process level to the business level. The graduate will have a deep understanding of the theory of systems, process automation, automation equipment, algorithms, information technology, programming, data processing and data transmission, information systems, real-time systems, visualisation of processes, modelling and simulation of systems, systems for decision support in business activities, systems integration. This knowledge will equip the graduate with the ability to analyse, design and maintain a huge amount of information of technology systems and specific types of information systems for control processes and decision support regarding specific requirements of the enterprise, organisation or institution. The graduate will be aware of the social, moral, legal and economic contexts of the profession and the consequences of automation and information technology application. Moreover the graduate will be ready to perform in the field of industry and services as well as to study the second degree in automation and applied informatics. The graduate will be able secure employment and work successfully in jobs connected with the implementation, operation and maintenance of control and information systems for technological processes control and data processing in various fields of industry.

POSTGRADUATE PROGRAMME (PhD.)

Process Automation and ICT Implementation

The graduate will have developed expertise in the modern fields of automation and control processes utilising information technologies in the development of new methods, algorithms and procedures on the level of a scientist and a researcher. Depending on the choice of elective subjects, students can specialise in the areas of complex systems by utilising information technologies, in the field of modern flexible manufacturing systems or intelligent management techniques with artificial intelligence. The individual will master mathematical principles, theory and cybernetics methodology combined with advanced methods, theories of management and automation. Upon completion of the programme, the graduate will have developed knowledge of the methods and principles for designing the complex systems and complex systems of information technologies. The graduate will be able to analyse and define the problems of scientific research, implement projects by using the latest formal tools and experimental procedures in accordance with the EU legislation. The graduate will understand the background of automation, control and related sciences as well as the physical fundamentals of the originally implemented solutions for automated and automatic control, information technology, preparation and management of experiments, modelling and simulation. The graduate will be aware of the social, moral, legal and economic aspects of the profession as a scientist or a researcher. The graduate will be well prepared for scientific or research work in the field of research and development of new methods for the management of complex systems based on the latest information about control algorithms. The individual will also be ready to articulate the problem and lead the research team professionally and can also successfully perform as a top development researcher in the top scientific, research and academic institutions in both domestic and foreign labour markets.
LIST OF SUBJECTS OFFERED BY THE INSTITUTE

Applied Mathematics
Automatic Control Hardware
Automatic Control Theory
Automation of Data Acquisition and Processing
Automation Production Devices
Bachelor’s Project
Bachelor’s Thesis
Basis of Automated Control
Communication Technologies
Complex System Theory
Computer Architecture and Operating Systems
Computer Graphics and Digital Image Processing
Computer Integrated Manufacturing
Computer Networks
Control of Flexible Manufacturing Systems
Decision Support Systems
Design Engineering of Control Systems
Development of Information Systems
Diploma Thesis
Dissertation Project I, II, III, IV, V, VI
Graduation Project
Graphical Systems
Industry Controllers Programming
Information Systems
Information Systems – Deployment and Integration

Information Technologies
Integration of Production Control Systems
Intelligent Control Methods
Internet Technologies
Knowledge Representation and Inference Mechanism
Mathematical Methods of Experiment Planning and Evaluation
Mathematics I, II, III
Neural Networks and Genetic Algorithms
Object Oriented Programming
Pedagogic activities I, II, III, IV, V, VI
Planning of Control Systems
Process Visualisation
Production Systems Control
Professional practice
Programmable Logic Controllers
Programming Languages
Programming of Industrial Controllers
Real-Time Control Systems
Research paper I, II, III, IV, V, VI, VII
Simulation Optimisation in Production Systems Control
Software Engineering
Software Project Management
Systems Modelling and Simulation
Systems Theory

GRADUATE THESSES

List of theses contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

Master’s Theses
Šišitka, M.: Analyse and design of data warehouse for industrial enterprise
Kratochvil, M.: Application for remote periphery of mobile device communicating through mobile data network
Berčík, P.: Application of welding robot FANUC Arc Mate 120iC/10i in small series production
Frank, J.: Safety standards for safety-critical processes in the railway industry
Kubovčíková, J.: Database of facial features used by facial composite systems
Cuninka, P.: Evaluation of safety – critical process according to the selected standard and proposal of the safety automation functions
Hanuliak, M.: Phase portraits of linear and nonlinear dynamical systems
Ujčak, V.: Identification of position of a mobile device in the building
Mosor, T.: Implementation of application in Customer Relationship Management system
Lepieš, P.: Implementation of the inertial navigation system for sensing the position of a point in space
Kováčová, M.: Information system - electronic agenda for engineering company
Baláž, M.: Information system for the needs of education in the course of the Welding Technology for the Institute of Production Technologies
Galbička, O.: Comparative study of methods for determining production batches
Kraic, D.: Communication system for RACOM radiomodems with compression support
Dubáň, J.: The critical authorizations in SAP
Nagy, M.: Linux driver for RACOM radiomodems
Turanec, T.: Mobile phone application for operating system Android to synchronize with dotProject system
Braniša, T.: Warehousing system model
Benka, T.: The model of connected vessels
Danek, M.: Modeling of traffic system in Hlohovec
Žember, D.: Module of examination for online testing system
Kúlich, M.: Visualization module for the on-line exam system
Janoušek, K.: Design and implementation of database synchronization and mobile applications of tourism for iOS
Mikulašek, M.: Design and Implementation of the Applications to Control the Development Module Arduino Uno for Android
Belan, R.: Design and implementation of information system for production of container systems for industrial use

Tadanaí, O.: Design and implementation of management information system for land community administration
Kíllány, M.: Design and implementation of High Availability cluster using Oracle Clusterware
Fazekas, M.: Design and implementation of mobile application for home automation control
Zvonár, A.: Design and implementation of system for severe accident management
SKR-SAM
Slovák, R.: Design and implementation of robotic workstation using the Safety PLC complying with standard IEC SIL3
Bartoš, M.: Design, analysis and modeling of control system with predictive controller
Mogišský, D.: Construction of electronic torque wrench
Lendel, J.: The design of Fuzzy Control System on the PLC basis
Cigáni, M.: Proposal of the information system for Permanent placement department of Manpower Ltd.
Urban, R.: Information system for the dental company needs
Fusták, M.: Information system for the company Innov8, Ltd.
Žarnócai, D.: Information system for the company Prestige & Pristine
Miklošovič, T.: Information System Design for Company Realtec plus s.r.o.
Behaneč, B.: Design of Information system for ŽSR (Railways of Slovak republic) – dynamics ride of the train module
Remenárová, K.: Project Information System training
Kubala, J.: Design of multisensor monitoring system
Hrabala, M.: Proposal for heating plant operation optimization
Šperka, A.: The design of a company network and its internal security
Varha, R.: Suggestion of control system for a model of a vehicle
Ondráčka, T.: Proposal for controller for the smokehouse in a meat production company
Hetteš, P.: Design of a robotized workplace for the new production line
Rimovský, T.: Design of software for the formulation of requirements of Smart Home
Braniš, V.: Proposal of system for reporting and evidence incidents and accidents
Suchan, J.: Design of virtual model in software Matlab/Simulink
Krošlák, D.: Optimizing the Performance Characteristics of the Vehicle
Matovič, M.: Optimization of product batches of A parts
Lovžišková, K.: The comparison of numerical methods for calculation of double integral
Demian, A.: User interface for evaluation of measured data
Šebeň, T.: Rationalization of a train traffic diagram at selected connecting points using simulation
Grolmus, M.: Realisation of native mobile application for Android platform for support work with CMS Joomla
Susta, M.: Managing of automated house by PLC
Hnilica, P.: Automation of the unit for completing aluminium closures
Palkovič, J.: Solution to the problem of determining the optimal production batch in discrete manufacturing
Mayyahi, A.H.K.: Simulation of a conveyor system for palettes at peak performance
Tibenský, P.: simulation of logistics process CDP VOZ a.s.
Fraňo, D.: System for distribution of audio and video from analog camera to mobile devices
Potkány, G.: Accommodation information system for needs of ŠDaj M. Uhra
Rolinec, M.: Determination of optimal production batch for the selected production system
Deák, M.: Virtual controller DC1020
Švec, O.: Creation of framework for executing recurring jobs in MS Dynamics CRM
Brath, M.: Creating the learning portal for selected tasks in discrete mathematics
Kúsek, M.: Usage of the programming interface in VBA in changing of the 3D scene and its photorealistic visualisation
Repka, M.: Use of simulation for improving the production line Belt-drive
Schir, J.: Use of simulation in scheduling operations
Musil, V.: The use of structured cabling for the management of technical equipment
Klačanský, M.: Use of artificial intelligence in computer games
Blahút, M.: Remote access of alarm registration center for technical equipment

Bálovský, G.: Secure internal system for dispatching company
Lengsfeld, M.: Improving the performance of the production line using
Pšteková, G.: Improving the process of windows production
Majko, P.: Improvement of selected parameters of a production system at Hella
Slovakia Front-Lighting, s.r.o.

PhD Theses
Horalová Kalinová, Michaela: Structural analysis of complex processes using the data mining methods
Smolárik, Lukáš: Surge control of turbo compressor
Strašítký, Andrej: Processes automation in smart house control
Štrbo, Milan: Complex model-oriented safety analysis of risks in the process for control systems for safety-critical processes development
Ondríga, Ľuboš: Design and implementation of data acquiring and processing methods for ergonomic system EAWS
Kurnátová, Júlia: Optimization of production targets using simulation optimisation

Liška, Vladimír: Frequency control of Duffing’s oscillator with high-speed feedback

Habilitation theses
Kopček, Michal: Management of FAT for the process level control systems

RESEARCH AT THE INSTITUTE

The research at the Institute of Applied Informatics, Automation and Mechatronics (UIAM) at STU MTF is focused on the areas of Automation and ICT implementation of the control processes at all levels of control in the enterprise. It reflects modern trends in controlling the processes according to the pyramid model of control.

The basic strategy of the research management at the UIAM is strictly based on the requirements of the European legislation in harmonising the processes for hierarchical control systems development and operation, as well as on the requirements for vertical integration of information control systems.

The research orientation of the UIAM stems from the efforts to meet the global objectives of human civilisation development:
- By applying the automation to the highest possible level contributing to reducing the energy consumption and its direct impact on the ecology development,
- By consistently elaborating the general requirements formulated in the international standards, carrying out the safety critical control systems development which have an impact on improving the safety and health protection,
- By modelling and testing complex software products, enhancing the efficiency of development, operation and maintaining the hierarchical systems for process control.

On the basis of these principles, the research at the UIAM is focused on the following areas:
1. Research and development in accordance with the requirements of the Factory of the Future:
   - Development of intelligent methods of control and implementation of artificial intelligence to the control,
   - Application of virtual reality and computer simulation technology,
   - Simulation and optimisation of processes and systems,
   - Big Data and knowledge discovery from production databases in the hierarchical process control,
   - Development of methodologies and documentation procedures in the life cycle of the product and development of technologies respecting the so-called good practice principles,
   - Horizontal and vertical integration of information and control systems,
   - Development of methodologies for testing the control systems software,
   - Identification and optimisation of parameters of control with an impact on improving the safety in industrial process control.
   - Development in the field of safety-critical control systems.
2. The basic research:
   - Development of control algorithms based on the dynamical systems theory,
   - Dynamical systems with high-speed feedback control,
   - Utilising the graph theory in the complex network structures.

The scientific profile of the UIAM is consistent with the trends defined by the Industry 4.0 concept. The Institute of Applied Informatics, Automation and Mechatronics together with partners builds the Scientific centre of Automation and ICT Implementation in Production Processes (AIVPS) as a flexible system of automated control of technology and production systems within the University science park project (2013-2015). The aim of the newly prepared scientific centre is to build and establish a strong regional centre of excellence, primarily focused on automotive and electronics industries widely represented in this region (VW, Peugeot-Citroen, ZF, Samsung, Foxconn etc.). The AIVPS centre is about to significantly support the transfer of innovations into the industrial entities.

Areas of expertise:
- Automation and Control of Processes
- Modelling and Simulation of Systems
- Information Systems
- Acceptance Testing of Control Systems Software
- Knowledge Discovery in Databases
PROJECTS OF THE INSTITUTE

<table>
<thead>
<tr>
<th>Name of the project</th>
<th>Duration of project</th>
<th>Programme</th>
<th>Annotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project IPID</td>
<td>01/2011 - 12/2014</td>
<td>DAAAD - The German Academic Exchange Service</td>
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<td>Within the IPID programme, doctoral students of both universities (TU Ilmenau, Germany and STU MTF) have the chance to participate in mobility at the partner university. The programme aim is to enable both domestic and foreign doctoral students to acquire a multi-national dissertation, thus educating high-quality young researchers for both Slovakia and Germany, and establishing scientific co-operation between the two countries. The programme involves two activities: 1. Fulfilling the partial objective of the “Autonomy microsystems for biosensorics” project. The project aim is to examine and design modern technologies for microtechnologically constructed biosensors which are independent in terms of power and able to communicate with each other in local networks, transferrable and implantable into a human organism. The intention is strongly interdisciplinary, and therefore structured to various branches and faculties. 2. Multi-national network of PhD students. The programme simultaneously supports the establishment of a multi-national network for PhD students’ education which would enable the exchange and mobility of PhD students and support the perspective of multi-national study programmes and double doctoral degrees.</td>
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<tr>
<td>Name of the project</td>
<td>ITMS of project</td>
<td>Duration of project</td>
<td>Operational programme</td>
</tr>
<tr>
<td>Workplace: Automation and ICT Implementation of Production Processes and Systems – University Scientific Park</td>
<td>26220220179</td>
<td>03/2013 - 06/2015</td>
<td>Research and development</td>
</tr>
<tr>
<td>Project Title</td>
<td>Coordinator</td>
<td>Start date</td>
<td>End Date</td>
</tr>
<tr>
<td>Identification and evaluation of shapes and surfaces of materials scanned by laser confocal microscope</td>
<td>Ing. Tomáš Bezák, PhD.</td>
<td>01/01/2012</td>
<td>01/01/2015</td>
</tr>
<tr>
<td>Project Title</td>
<td>Coordinator</td>
<td>Start date</td>
<td>End Date</td>
</tr>
<tr>
<td>Study of flexible mechatronics system variable parameters influence on its control</td>
<td>Dr.h.c. Prof. Dr. Ing. Oliver Moravčík</td>
<td>01.01.2013</td>
<td>31.12.2015</td>
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</tbody>
</table>
Research into monitoring and assessing non-standard states in the vicinity of a nuclear power plant

Coordinator: Prof. Ing. Pavol Tanuška, PhD.
Type: OP VaV
Start date: 01/04/2012
End date: 30/06/2015

Industrial research is focused on the options to improve the quality and effectiveness of monitoring and assessing non-standard states in the vicinity of a nuclear power plant. Its objective is to implement theoretical knowledge of a research organisation and the know-how and experience of a private company into practice by utilising the technology for collection, processing, measurement, distribution, assessment and presentation of the data from the mobile and stationary units and related risks in the vicinity of a nuclear power plant, in order to improve its operation and increase its quality. Advanced sophisticated information and communication technologies along with the elements of the existing telemetric system will be used within the project implementation. The project output will provide a system of utilising the project results in practice, resulting in significant improvement of the existing technologies and procedures. The improvement will assure a higher quality of the collection, scope of data processing, measurement, distribution, assessment and presentation of data and related risks in the vicinity of the nuclear power plant in real time.

Writing an interactive multimedia textbook of “Mechatronics” for secondary technical schools

Coordinator: Ing. Igor Halenár, PhD.
Type: KEGA
Start date: 01/01/2012
End date: 31/12/2014

Various forms of multimedia can be used to support better, more effective and intensive perception of information (texts, pictures, photographs, speech, music, animations, video etc.) in technical subjects. In pedagogy practice, students are not able to absorb all the information delivered to them. It is therefore important to focus the flow of information, select the most important ideas and search for the key message within the subject studied. Multimedia and hypertext provide a tool to support study information, easy information retrieval and orientation within it. The project was focused on the preparation and development of a modern interactive multimedia teaching application for secondary schools in the Slovak Republic with the aim to increase the level of teaching/learning the subject of “Mechatronics” via video-sequences, programmable interactive animations, pictures and others.

Implementation of the internal quality assurance system

Coordinator: doc. RNDr. Mária Mišútová, PhD.
Type: SOP Human resources
Start date: 01/01/2012
End date: 30/06/2014

The aim of the project was to design and verify a system of objective quality assessment, effectiveness and suitability of education in compliance with sustainable adaptability of universities to the current and future needs of the knowledge society. The project will enable implementation of the system of direct quality measurement of university education, thus providing the space for improving the university output and approximation of the educational system to societal needs. The project objectives were to: design and verify a system of direct quality measurement of university education in the Bachelor degree study programmes in STU MTF; to design and verify the measures for eliminating information deficiencies in the Bachelor degree study programmes in STU MTF; to design and verify the measures for improving the quality of university education in the Bachelor degree study programmes in STU MTF; to design and verify the impact of the above-mentioned measures in the Bachelor degree study programmes at STU MTF.

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

<table>
<thead>
<tr>
<th>Country</th>
<th>Employee</th>
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<tbody>
<tr>
<td>Australia</td>
<td>Kebísek Michal, Ing., PhD.</td>
<td>Hungary</td>
<td>Kopček Michal, Ing., PhD.</td>
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<td></td>
<td>Tanuška Pavol, prof. Ing., PhD.</td>
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<td>Škulavík Tomáš, Ing., PhD.</td>
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<td>Važni Pavel, doc. Ing., PhD.</td>
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<tr>
<td>Belgium</td>
<td>Tanuška Pavol, prof. Ing., PhD.</td>
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<tr>
<td>Czech Republic</td>
<td>Abas Marcel, RNDr., PhD.</td>
<td>Portugal</td>
<td>Bezák Tomáš, Ing., PhD.</td>
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<td>Božek Pavol, doc. Ing., CSc.</td>
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<td>Eliáš Michal, Ing., PhD.</td>
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<td>Juhás Martin, Ing., Ph.D.</td>
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<td>Juhásová Bohuslavá, Ing., Ph.D.</td>
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<tr>
<td>Canada</td>
<td>Juhás Martin, Ing., Ph.D.</td>
<td>Russia</td>
<td>Michałtowik German, doc. Ing., CSc.</td>
</tr>
<tr>
<td></td>
<td>Juhásová Bohuslavá, Ing., Ph.D.</td>
<td></td>
<td>Škulavík Tomáš, Ing., Ph.D.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Italy</td>
<td>Špendla Lukáš, Ing., Ph.D.</td>
</tr>
</tbody>
</table>
MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS

SSKI – Slovak Society for Cybernetics and Informatics of Slovak Academy of Sciences (member of IFAC)
doc. Ing. Peter Schreiber, CSc.
Prof. Ing. Pavol Tanuška, PhD.
doc. Ing. Pavel Važan, PhD.
Prof. h. c. prof. Dr. Ing. Oliver Moravčík
Ing.PhD. Michal Eliáš
Ing. PhD. Michal Kopček
Ing. PhD. Martin Juhás
Ing. PhD. František Miksa
Ing. PhD. Eduard Nemlaha
doc. Ing. Maximilán Štrémý, PhD.
Ing.Tomáš Bezák, PhD.
Ing. Michal Kebísek, PhD.
Ing. Miriam Iringová, PhD.
doc. Ing. German Michalčonok, PhD.
prof. Ing. Dušan Mudrončík, PhD.
Ing. Jozef Vaský, PhD.
Ing. Andrej Eliáš, PhD.
Ing. Gabriela Krizanová, PhD.
Ing. Bohuslava Juhásová, PhD.
doc. Mgr. Róbert Vrábeľ, PhD.
doc. Ing. Pavol Božek, PhD.
Ing. Igor Halenár, PhD.
Ing. Pavol Bezák, PhD.

Mensa Slovakia
Mgr.Marcel Abas, PhD.

Slovak Association for Geometry and Graphics
doc. RNDr. Mária Mišútová, PhD.

MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS

IIA - International Informatization Academy, USA
Prof. h.c. prof. Dr. Ing.Oliver Moravčík

International Society for Geometry and Graphics, USA
doc. RNDr. Mária Mišútová, PhD.

IUMB - International Union of Machine Builders, Ukraine
doc. Ing. German Michalčonok, PhD.
doc. Ing. Peter Schreiber, CSc.
Prof. Ing. Pavol Tanuška, PhD.
doc. Ing. Pavel Važan, PhD.

IEEE - Institute of Electrical and Electronics Engineers, USA
Prof. Ing. Pavol Tanuška, PhD.

IACSIT – International Association of Computer Science and Information Technology, Singapore
Prof. h.c. prof. Dr. Ing.Oliver Moravčík
doc. Ing. Peter Schreiber, CSc.
Prof. Ing. Pavol Tanuška, PhD.
doc. Ing. Pavel Važan, PhD.
doc. Mgr. Róbert Vrábeľ, PhD.
Ing. Igor Halenár, PhD.
Doc. Ing. Michal Kopček, PhD.

IAEng - International Association of Engineers, Hong Kong
Prof. Ing. Pavol Tanuška, PhD.

PUBLICATIONS (THE MOST IMPORTANT PUBLICATIONS IN 2014)

List of publications contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.


INSTITUTE OF SAFETY, ENVIRONMENT AND QUALITY

CONTACT

Director
Prof. Ing. Karol Balog, PhD.
e-mail: karol.balog@stuba.sk
tel.: +421918646041

Address
Botanická 49, 917 24 Trnava,
Slovak Republic
tel.: +421918646023

STAFF

- Professors: 2
- Assoc. Professors: 2
- Senior Lecturers: 14
- Research Fellows: 4
- PhD Students: 24

EDUCATION AT THE INSTITUTE

Number of the students (at 30/10/2014) registered on the study programmes offered by the institute: 652
Number of students graduated in the academic year 2013/2014 from the study programmes offered by the Institute: 220

STUDY PROGRAMMES

Bachelor’s Degree
- Occupational Health and Safety
- Production Quality

Master’s Degree
- Integrated Safety
- Engineering of Production Quality

Postgraduate Degree
- Integrated Safety
- Engineering of Production Quality
**Engineering of Production Quality**

The graduate will achieve a complex PhD education in production quality focusing on quality management skills. They will understand the scientific methods of research and development to acquire knowledge. The graduate will be able to develop creative methods in quality management, integrated and complex quality management, risk management, safe working environment, fire protection and other related sectors. The graduate could operate as a highly qualified expert in institutions of base and applied research, a researcher and teacher in universities, advisor and consultant within engineering organisations dealing with designing and assessing safety systems and process related documentation and other regulation documents. The graduate will find employment opportunities as a manager responsible for quality assurance in individual structures of an industrial plant, or an expert in quality management.

**BACHELOR’S PROGRAMME (Bc.)**

**Work Safety and Health Protection**

Graduates from the programme will have gained a thorough theoretical knowledge of natural, economic and social sciences and will have developed knowledge of technical sciences with a focus on safety and reliability of production technologies, safety of work environment and environmental protection. The graduate will also have learnt how to assess the safety of technical systems, production technologies, analysis of failures and disasters, risk identification and quantification, suggestion of preventive measures aimed at the staff and safety improvement and health protection. Those completing the programme will also have gained knowledge in the field of legislative tools for managing dangerous activities, testing and certification of materials and products and application of safety and technological procedures and parameters of materials. After completing the programme, graduates could find employment as a safety officer in industry, organisations, governmental bodies, insurance companies, or an advisor/consultant in the engineering organisations dealing with designing and assessing safety systems and also utilising knowledge gained during the programme in order to contribute to the design of a safe and healthy working environment.

**Production Quality**

The graduate understands the issues of quality management in industrial plants and quality management systems, application of basic tools and techniques of quality management, including statistical methods. The graduate will have gained detailed knowledge of quality management, basic knowledge of natural science disciplines (mathematics, physics), machine technologies and management of machine production. General knowledge of industrial plant management, together with basic computer literacy, will create a supposition of successful communication with research staff as well as management and organisation structures staff in economic organisations. The graduate will achieve ISO standards skills mainly in quality management and will be able to collaborate in operating quality management systems and process related documentation and other regulation documents. The graduate will find employment opportunities as a manager responsible for quality assurance in individual structures of an industrial plant, or an expert in quality management.

**MASTER’S PROGRAMME (Ing.)**

**Integral Safety**

Graduates from the programme will have gained knowledge in the field of environmental and safety risks management. The graduate will be able to control activities within work and environment safety, carry out risk analysis and related documentation, and propose system measures to increase the efficiency of control systems of integrated safety. After completion of the programme it would be possible for the graduate to secure employment in administration, labour inspectorates, technical inspection and environmental inspection, and also in positions of a leader and consultant in engineering organisations dealing with designing and assessing the safety systems in industry, insurance companies and manufacturing.

**Engineering of Production Quality**

The graduate understands basic technological and managerial issues of an industrial plant and servicing company, as well as designing, maintaining and implementing quality management systems. The graduate will master the subject matter of international standards for quality management and intellectual property. The graduate will have a deep knowledge of natural sciences and specific areas of plant management, particularly in designing maintaining, implementing and improving quality management systems, total quality management /TQM/ approaches, as well as modern tools and methods of quality management. The graduate is able to develop and implement quality management systems. The graduate may be employed in several areas: industrial companies, services, state administration and at all positions where synergy of management, technical knowledge and skills is needed.

**POSTGRADUATE PROGRAMME (PhD.)**

**Integral Safety**

The graduate will have mastered the research and experimental methods within safety and security administration systems and safe working environments. The graduate will be able to develop and apply the theory in accordance with requirements of practice focusing on technical and human aspects of the man-machine-environment system. After completion of the programme the graduate will be able to carry out scientific research in teams, bringing solutions to complex tasks of theory and practice, risk management, safe working environment, fire protection and other related sectors. The graduate could operate as a highly qualified expert in institutions of base and applied research, a researcher and teacher in universities, advisor and consultant within engineering organisations dealing with designing and assessing safety systems, as well as in insurance companies.

**Engineering of Production Quality**

The graduate will achieve a complex PhD education in production quality focusing on quality management skills. They will understand the scientific methods of research and development to acquire knowledge. The graduate will be able to develop creative methods in quality management, integrated and complex quality management, to design and operate social-technical and management systems in different types of organisations, to establish innovative processes and to improve the quality management. The graduate is able to analyse the market, to analyse customers, to design and evaluate projects for an organisation. The graduate will be mainly employed as a top manager in different organisations, as a consultant for consulting companies and at universities in scientific research works and education work.
LIST OF SUBJECTS OFFERED BY THE INSTITUTE

Bachelor’s Project
Bachelor’s Thesis
Basics of Environmental Studies
Basics of Safety Engineering
Connoisseurship of Commodity
Dissertation Project I - VI
Emergency Preparedness for Accidents and Hazardous Situations
Environmental and Safety Information Science
Environmental Chemistry
Environmental Engineering
Evaluation of Indoor Environment Aspects of OSH
Fire and Accident Investigation
Fire and Accident Modelling
Fire Dynamics
Fire Engineering
Fire Protection of Buildings
General Chemistry
Hazardous Materials
Human Reliability in Technical Systems
Industrial Toxicology
Inorganic and Organic Chemistry
Introduction to Fire Engineering
Law and Technical Directions of WSHP
Management of Dangerous Activities
Management Systems of the OSH
Measurement and Monitoring of Harmful Substances on Workplace
Occupation Environment Engineering
Pedagogical Activity I - VI
Personal Protective and Rescue Systems
Processes of Environmental Technologies
Professional Practice
Progressive Methods of Integrated Protection of the Environment
Research Work
Reserved Technical Devices
Risk Analysis Methods
Risk Control Methods
Risk Evaluation in the Environment
Risk Theory and Casual Processes
Safety and Reliability of Systems
Safety Engineering
Safety Management
Sanitation of Work
Technological and Natural Emergencies
Technologies of Waste Management
Theory of Fires and Explosions
Diploma Thesis
Thesis Project / Diploma Project
Work Safety and Health Protection
Basics of Quality Management
Statistical Methods of Quality Control
Tools and Techniques of Quality Management
Total Quality Management
Monitoring of Customer Satisfaction
Standardisation, Certification, Conformity Assessment
Case Studies in Quality Management
Quality Audits
Consumer Protection and Complaints Management
Computer Support in Quality Management
Quality Management Systems

GRADUATE THESIS

List of theses contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

Master’s Theses
Nesté, M.: The analysis of the impact of radioactive waste burning on the environment
Boroš, T.: Analysis of safety measures in distribution of natural gas
Radošinský, P.: Analysis of emergency events threatening the infrastructure of the selected region
Kozáková, M.: The Analysis of occupational hazards in the foundry
Michelčíková, V.: The risk analysis for service heat and chemical heat treatment of metals
Nosko, G.: Occupational risk analysis in a selected company
Rubišáková, L.: Risk analysis within maintenance and repairs of rail vehicles
Pfeiffer, R.: Risk Analysis in the Wood Industry
Blašková, Z.: Analysis of the method of radioactive waste management in AE Mochove
Pavlačka, P.: Analysis of appropriate extinguishing agents used for the protection of data centers and server rooms
Blesáková, V.: Application of the Lean Six Sigma methodology to improve bodywork parts of the cars
Babliššová, L.: Application of Six Sigma methodology in process of manufacturin rubber-metal parts
Václav, C.: The application of methodologies Six Sigma in a process of a production of light sources
Petrovičová, I.: Application of DOE method to determine optimal levels of input factors
Bobková, J.: Application of DoE in the manufacturing process of brake calipers
Pritsková, V.: An application of the method Global BD to solve the problem with the seats in the car
Steinhübel, S.: Application of the method in terms of MORT editor LibreOffice Calc spreadsheet
Kaluzhová, M.: Audit of health and safety at work in the chosen company
Blanšák, R.: Safe handling with the radioactive waste water in JAVY, a.s.
Kolarík, L.: Safe operation and maintenance of fire safety systems traction rolling stock
Jančeková, M.: Operators safety at work on vacuum press equipment at the furnitue factory Decodom, s.r.o., Topoľčany
Lehutová, S.: Safety in handling and storage of chemicals and mixtures of EKOSOL Ltd.
Čendek, P.: Safety and Environmental aspects of brownfields in the selected Infragur
Hrebšňek, M.: Safety and environmental labeling of selected commodity
Cingel, Z.: Safety labeling of wiring materials
Kovárová, Z.: Safety requirements for the roller skates
Kaiser, P.: Safety requirements for welding workplaces in the company Pivot & Qari
Rigová, G.: Safety rules and signs in tourist resort
Dermíšek, M.: Safety impacts of using control devices and detection systems
Cuninka, P.: Biodegradable plastic shopping bags — The degradation
Pavlačka, P.: Fire detection in electrical cable ducts and cable traces
Žažo, R.: Voluntary reporting in relation to the environment, sustainable developement, health and safety
Prekopová, N.: Environmental and Safety Labeling of Products in the Context of Green Public Procurement in Practice
Pénzez, M.: Experimental determination and comparison of thermal resistance established layer of selected organic dust
Branišová, M.: Implementation of Tools and Methods Quality Management in the Course of Solving of the Increased Number of Errors of a Type „ASPECT” on the Assembly line
Vyskočová, L.: Implementation of quality tools and methods of quality management with a focus on improving the production process
Krajič, M.: Integration of process audits according to VDA 6.3 in the system evaluation and selection of suppliers at ArcelorMittal Tailored Blanks Senica, Ltd.
Mikulová, M.: Comprehensive evaluation of Occupational Health and Safety at selected organization
Marenišťaková, V.: A complex evaluation of the level of safety in the company A-STUDIO Ltd.
Halanárová, S.: A comprehensive audit of OSH in selected construction projects
Moravcová, M.: Quality control of materials in the production process, using different scanning calorirometry
Fraňová, A.: Methods for characterization of biomass feedstock for biofuel production
RESEARCH AT THE INSTITUTE

Areas of Research
- fire protection and fire prevention,
- modelling the impacts of industrial accidents,
- health and safety aspects of occupational indoor environments,
- biodegradability of cutting fluids,
- advanced oxidation processes,
- renewable sources of energy,
- extinguishing agents and application techniques,
- fire investigation,
- fire hazard of materials,
- explosion prevention of industrial dust.

Research characteristics

Laboratory testing
The research includes the testing of the combustibility and explosiveness of substances, product and wastes in different states, the appraisal of fire-fighting foam and spray properties in the aging process, the monitoring of chosen factors in the work environment and the appraisal of noise and lighting at the workplace. Research is also conducted to analyse of drinking water quality, determine the biodegradability of cutting fluids and determination organic pollutants using analytical methods.

Document elaboration
The processes are documented for hazard assessment and risk analysis of selected substances, products, wastes and technologies to meet company requirements, fire and technological investigation, protocol for identification of the external effects, explosion protection documentation and emergency plans in accordance with legislation. Risk assessment and risk analysis of fires in industry, implementation of occupational health and safety assessment series (OHSAS), (internal audits, preparation for certification audits) are also compiled.

Research studies
Research studies are conducted in the areas of fire hazard of polymers, wood, industrial powder and flammable materials and environment issues in fire protection, foam extinguishing agent and systems, the environmental cost of the usage of foam as extinguishing agents, assessment of biological degradability of selected foaming agents and the fire hazard of PVC cables and their protection. Research is also carried out in order to create a knowledge database and expert system for the risk assessment of dangerous substances, products, wastes and technologies, model the impacts of industrial accidents on the environment, fire modelling and comparison of different types of modelling programs in the field of materials dispersion to the environment. Studies are conducted into the health and safety aspects of occupational indoor environments, the progress and utilisation of small hydro-energetic source in combination with solar equipment for engineering, the establishment of a technical-consulting laboratory for utilising and consequent propagation of solar energy. The exploitation of advanced oxidation processes in the removal of organic pollutants from wastewaters by the use of wastes from production and treatment of metals as catalysts and the establishment of a botanical garden as an instrument for escalation of environmental consciousness of citizens.

Consulting, training and courses
Training and courses are focused on health and safety at work, safety education based on international standards, research coordination for specific application targets and requirements for the increase of the safety of industrial regions. Guidance is also given for implementation of the Occupational Health and Safety Assessment Series (OHSAS), consulting in the field of emergency planning and consulting in the utilisation of renewable sources of energy.

Areas of expertise
- Analysis of Fire Hazard of Industrial Dust
- Safety of Technological Processes and Systems
- Extinguishing Substances and Technologies
- Systems of Management of Safety and Occupational Health Protection according to the OHSAS 18 001
- System of Environmental Management according to the ISO 14 001
- Fire and Safety Engineering
- Flammable Liquids, Solids and Powder
- Work with Dangerous Substances
- Analysis and Risk Regulation with the Methods Checklist, Failure Modes and Effect Analysis, Hazard and Operability Study, Fault Tree Analysis
- Safety of Chemical Technologies
- Safety in Area of Explosive Substances and Explosions
- Fire Hazard Analysis
- Fire Safety of Buildings
- Alternative Energy Sources
- Air Emissions
- Processing with Waste
- Progressive Technologies of Water Cleaning
- Integration of Systems of Safety and Occupational Health Protection (BOZP), – Quality and Environment
- Environment Evaluation
- Explosion Prevention
- Risk Analysis
- Storage of Danger Substances – Toxicology of Substances including Risk Definition
- Prevention of Dangerous Industrial Accidents
- Implementation of the OHSAS and EMS Systems in Enterprises

PROJECTS OF THE INSTITUTE

Project Title: Elearning as a Handbook of Health and Safety in Welding
Coordinator: Ing. Zuzana Szabová, PhD.
Start Date: 01/01/2013
End Date: 31/12/2015
Programme: KEGA
Annotation: The project aims to create a comprehensive handbook on safety and health (OSN) and fire protection in the classic, special, modified and hybrid technologies, welding, brazing and thermal cutting of materials. The guide to health and safety in welding will be available on the Internet for students of all forms of study within elearning and for use by experts. The guide will be an important tool and source of information in assessing risks for a wide range of subjects using the technology of metallurgical bonding and cutting of materials. There will also be taken into account the effective application in existing social practice. The guide will simplify access to the information and bring a new perspective for solving practical problems of safety and health in welding.
<table>
<thead>
<tr>
<th>Project Title</th>
<th>Progressive methods of material firetechnical characteristics determination in fire engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Prof. Ing. Karol Balog, PhD.</td>
</tr>
<tr>
<td>Start Date</td>
<td>24/10/2013</td>
</tr>
<tr>
<td>End Date</td>
<td>30/09/2017</td>
</tr>
<tr>
<td>Programme</td>
<td>APVV</td>
</tr>
<tr>
<td>Annotation</td>
<td>The contribution to research in the area of fire engineering is in accordance with world trends through the utilisation of the progressive methods for the determination of important firetechnical characteristics for the calculation and modelling of compartment fires. The characterisation and verification of the laboratory testing methods will utilise modern equipment for obtaining the unique material characteristics and their alterations due heat and fire. The behaviour of the solid and liquid materials will be predicted in the process of initiation and propagation of combustion on the ground. New methods will be applied for the determination of critical boundary conditions of testing for representative materials in the progressive material structures for the improving of outputs from the fire scenarios used.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Construction of an educational laboratory for fire reconstruction on a laboratory scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Ing. Jozef Martinka, PhD.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2013</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2015</td>
</tr>
<tr>
<td>Programme</td>
<td>KEQA</td>
</tr>
<tr>
<td>Annotation</td>
<td>Investigation of fires causes is one of the most difficult tasks for fire protection. Correctly determined the cause of the fire can be a thin line between justice and miscarriages of justice, and a key tool for the determination respectively. Verification of the fire cause is its reconstruction on a laboratory scale. Reconstruction of a fire on a laboratory scale is divided into the reconstruction of initiation and the reconstruction of progress (development) of the fire. Reconstruction of initiation gives an answer to the question whether a specific ignition sources could be the cause of the fire. Reconstruction of the fire development provides valuable data about the behaviour of materials and products in the fire under conditions similar to the fire. The basic assumptions for the applicability of laboratory tests for the reconstruction of fire are the proper selection, design and implementation of laboratory tests. Currently there is no specialised facility for the reconstruction of fire on a laboratory scale, and no training centre to prepare specialists for the execution of the tests in the Slovak Republic.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Studying the use of advance oxidative processes for metalworking fluids lifetime extension and for their following acceleration of biological disposal at the end of the life cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>prof. Ing. Maroš Soldán, PhD.</td>
</tr>
<tr>
<td>Start Date</td>
<td>01/01/2014</td>
</tr>
<tr>
<td>End Date</td>
<td>31/12/2017</td>
</tr>
<tr>
<td>Programme</td>
<td>VEGA</td>
</tr>
<tr>
<td>Annotation</td>
<td>The project follows the possibility of using low concentrations of O3 as a progressive method of hygienisation of MWFs during the period of their use in machining. It is for the purpose of extending the lifetime of MWFs, protection of the human operator of the machine by reducing the amount of biocide used and reduction of the used sources for their longer utilisation (economic, environmental and safety aspects). On the other hand, after the useful life of process fluids in the machine, the effects of the high concentration of O3 will be monitored (with the combination of other advanced oxidative processes mostly sonolysis and photocatalytical oxidative processes) to accelerate the biodegradation of MWFs (economic and environmental aspects). The decrease of organic substances content as well as the primary elimination of biocides will help the biological degradation of this type of waste. Both aims reflect the world trend of sustainability, decreasing substances toxicity and the increasing use of biological treatment of wastes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
</tr>
</tbody>
</table>
| Czech Republic | Balog Karol, prof. Ing., PhD.  
Bartoľová Alica, Ing., PhD.  
Blinová Lenka, Ing., PhD.  
Fišňa Jozef, Ing., PhD.  
Gerulová Kristína, Ing., PhD.  
Lestyánszka Škůrková Katarína, Ing., PhD.  
Martinka Jozef, Ing., PhD.  
Michalíková Anna, Ing., CSc.  
Paulová Ivetta, doc. Ing., PhD.  
Rantuch Peter, Ing., PhD.  
Rusko Miroslav, doc. RNDr., PhD.  
Sirotíak Maroš, RNDr., PhD.  
Uršíľová Jana, Ing. Mgr., PhD. |
| Poland | Balog Karol, Prof. Ing., PhD.  
Soldán Maroš, Prof. Ing., PhD. |

<table>
<thead>
<tr>
<th>MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovak Academy of Sciences / Slovak Botanical Society</td>
</tr>
<tr>
<td>Slovak National Accreditation Society SNAS</td>
</tr>
<tr>
<td>Slovak Standards Institute TC 15</td>
</tr>
</tbody>
</table>
| Slovak Standards Institute TC 17 | Prof. Ing. Karol Balog, PhD.  
Ing. Jozef Martinka, PhD.  
Ing. Tomáš Chrebet, PhD. |
| Slovak Standards Institute TC 27 | Ing. Kristína Gerulová, PhD. |
Slovak Standards Institute TC 29
Ing. Jozef Harangozó, PhD.

Slovak Standards Institute TC 31
Prof. Ing. Maroš Soldán, PhD.
Ing. Kristína Gerulová, PhD.

Slovak Standards Institute TC 39
Ing. Peter Rantuch, PhD.

Slovak Standards Institute TC 72
doc. RNDr. Miroslav Rusko, PhD.

Slovak Standards Institute TC 91
Ing. Ivan Hrušovský, PhD.

Slovak Standards Institute TC 105
doc. Ing. Richard Kuracina, PhD.

Slovak Standards Institute TC 115
Ing. Pavol Čekan, PhD.

Slovak Academy of Sciences / Slovak Chemical Society
prof. Ing. Maroš Soldán, PhD.
doc. Ing. Richard Kuracina, Ph.D.
Ing. Anna Michalíková, PhD.

Slovak Academy of Science / Slovak Ecology Society
doc. RNDr. Miroslav Rusko, PhD.

Civic Association UMBRA - Union for Management of Biotops and Re-Activities
RNDr.Maroš Sirotiak, PhD.

Slovak Geochemical Association
RNDr. Maroš Sirotiak, PhD.

Slovak Association for Landscape Ecology
doc. RNDr. Miroslav Rusko, PhD.

Slovak Society for Environment – The Association of Slovak Scientific and Technological Societies
doc. RNDr. Miroslav Rusko, PhD.

Futurological Society in Slovakia
doc. RNDr. Miroslav Rusko, PhD.

MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS

Czech Republic Fire and Safety Engineering Association
Prof. Ing. Karol Balog, PhD.
Ing. Zuzana Szabová, PhD.

International Institute of Welding IIW
Prof. Ing. Karol Balog, PhD.
Ing. Zuzana Szabová, PhD.

European Network Education and Training in Occupational Safety and Health (ENETOSH)
Prof. Ing. Karol Balog, PhD.

International Association for Landscape Ecology
doc. RNDr. Miroslav Rusko, PhD.

PUBLICATIONS (THE MOST IMPORTANT PUBLICATIONS IN 2014)

List of publications contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.


RESEARCH CENTRE OF PROGRESSIVE TECHNOLOGIES

CONTACT

Director
Dr. h. c. Prof. Dr. Ing. Oliver Moravčík
e-mail: oliver.moravcik@stuba.sk
tel.: +421918646065

Deputy directors
doc. Ing. Maximilian Stremy, PhD.

Address
Hajdóczyho 1, 917 24 Trnava, Slovak Republic
tel.: +421910668300
fax.: +421910668699

STAFF
- Professors: 3
- Assoc. Professors: 2
- Research Fellows: 18
- Administration: 1

ACTIVITIES OF THE CENTRE

Date | Title of event or activity of the Centre in 2014
--- | ---
23/04/2014 | Project submitted within H2020, as a coordinator:
| “Improving cognitive skill of an industrial robot”
29/04/2014 | VEGA Project 1/0465/15
| “Design of Al-TM alloys for on-board hydrogen production”
30/04/2014 | KEGA Project 1/0840/15
| “Research into utilising progressive technologies for adaptive testing of knowledge and determining the personality profile, suitable also for the disabled”
07/05/2014 Project submitted within H2020: “Lead/Polymer bipolar battery”
28/08/2014 Project submitted within H2020: “Citizen driven security in the large urban environment”
28/08/2014 Project submitted within H2020: “Improving cooperation between LEA agencies and citizens”
17/09/2014 Project submitted within H2020, as a coordinator, within the TEAMING Call: “SlovakION - Slovak Centre of Excellence in Ion Beam and Plasma Technologies for Materials Engineering and Nanotechnology”. The project was approved by the European Commission and will be granted EU funds.
17/09/2014 Project submitted within H2020, as a coordinator, within the ERA CHAIR Call: “Cultivate Excellence in Micro- and Nano-structured materials research at the Slovak University of Technology”
8/09/2014 Project submitted within H2020: “Quasi solid-state lithium-chalcogenide bipolar battery”
7/10/2014 Project submitted within H2020: “Quasi solid-state bipolar cell”
14/10/2014 Project submitted within H2020, as a coordinator PHTC1: “Neuroplasticity”
“Citizen-initiated safety through innovative tools in the Slovak Republic”
“Research into the factors affecting the citizens’ feeling of (un) safety of and the possibility of increasing the feeling”
“Nanostructural changes induced by heavy ion irradiation with energies up to 50 MeV”
19/12/2014 Framework Agreement on Cooperation between the STU MTF and IFW Dresden

RESEARCH IN THE CENTRE

The Research Centre of Progressive Technologies (Slovak University of Technology in Bratislava, Faculty of Materials Science and Technology in Trnava) is primarily focused on Materials Engineering in the field of ion and plasma Technologies, Automation and ICT implementation in industrial processes and research field e.g. nanotechnology and nanostructures, sensorsics, specific hardware and software development, bioengineering and health, vision and processing, big data, humanoids, simulation and modelling. The area of Materials research will include theoretical modelling using ab-initio methods, either at a very accurate level treating small systems at the molecular scale, or DFT methods concerning bulk materials and surfaces. The area of Automation and ICT implementation will also provide space for research and development in a wide range of hardware, communication and management of automated software tools, knowledge based systems, archiving and distribution of knowledge of higher-level systems.

The Research centre comprises of two new buildings for the purposes of research, located on the campus. Research centres:

1/ Scientific Centre of Materials Research with laboratories focused on:
- ion beam technologies, plasmatic modification and deposition, analytical methods, computational modelling.

2/ Scientific Centre of Automation and ICT Implementation in Production Processes and related laboratories, comprised of the:
- control systems, ICIM, information integration and control systems, artificial intelligence, bioengineering, medicine/health, chemistry etc.

The further activities of the centre are:
Applied research in the above-mentioned research centres and the research fields, e.g.:
- Quantum chemistry, Benchmarking, Materials technology, Nanotechnology and Nanosciences, Nuclear fission, Nuclear fusion, Hydrogen and fuel cells, Radioactive waste, Climate change and Carbon cycle research, Radiation protection,
- Artificial intelligence, machine learning, human-robot interaction etc.,
- Big data, Business intelligence, data mining, knowledge discovery,
- Vision and image processing, evaluation,
- Microelectronics and hardware development, microchips,
- Sensor technology, tyres, drives, controlling and control systems, industrial communication technologies,
- Software development (GIS, Telemetric systems),
- Verifications and SW testing,
- Mathematical models and representations (systems with quick feedback).

Support to transfer the advanced technologies into practice, transfer of know-how, innovations and knowledge from the academic environment into practice and providing support for start-up and spin-off activities.

PROJECTS OF THE CENTRE

Name of project Human Resources Development in the field of research and development for the UVP-CAMBO
ITMS of project 26110230116
Duration of project 10/2013-06/2015
Operational programme OPV-2013/1.2./07-SORO
Annotation In October 2013, 14 researchers and operators were sent to Helmholtz-Zentrum Dresden Rossendorf to attend a 2-year educational programme within the working groups oriented on materials research and projects on the utilisation of ion beams. Their knowledge is being theoretically enhanced by attending specialised lectures and on-site training to use the unique equipment. The intention is that they will continue their scientific work in the Workplace of Materials Research after the construction of Slovakion is accomplished.
### PUBLICATIONS (MOST IMPORTANT PUBLICATIONS IN 2014)

List of publications contains authentic translations of the titles into English in the original wording as translated by the Institute, i.e. without English language proofreading.

<table>
<thead>
<tr>
<th>Name of project</th>
<th>University Scientific Park „CAMPUS STU MTF“ - CAMBO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITMS of project</td>
<td>26220220179</td>
</tr>
<tr>
<td>Duration of project</td>
<td>03/2013-06/2015</td>
</tr>
<tr>
<td>Operational programme</td>
<td>OPVv - 2012/2.2/08-RO</td>
</tr>
</tbody>
</table>
| Annotation | The aim is to build a university research workplace of excellence of international importance in the field of Materials research and ion technologies as well as information science, automation, modelling and chemistry. Specific objectives of the project: 
1. Applied research within the research workplaces 
   1. Research workplace of Materials research. 
   2. Research workplace of automation and ICT implementation in production processes and systems with laboratories. 
2. Support for modern technologies transfer into practice in the form of academic know-how, innovations and knowledge transfer into practice, start-ups, and spin-offs. |

<table>
<thead>
<tr>
<th>Name of project</th>
<th>Implementation of an internal quality assurance system in education</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITMS of project</td>
<td>2611023001/2</td>
</tr>
<tr>
<td>Duration of project</td>
<td>01/2012-07/2014</td>
</tr>
<tr>
<td>Operational programme</td>
<td>Operational programme of education</td>
</tr>
<tr>
<td>Annotation</td>
<td>The aim of the project is to design and verify the system of objective quality assessment, effectiveness and purpose of education in order to achieve sustainable adaptation of universities to the topical and perspective needs of the knowledge society. The project will enable the implementation of the system of direct quality measurement of university education with the aim of providing a space for improving the quality of the university institution output and approximation of the education system to the societal needs.</td>
</tr>
</tbody>
</table>

**MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS**

- **Slovak Physical Society**
  - doc. Ing. Stanislav Minárik, PhD.
  - doc. Ing. Róbert Riedlmajer, PhD.

- **International Federation of Automatic Control IFAC, branch of the Slovak Society of Cybernetics and Informatics, SAV**
  - doc. Ing. Maximílián Strémy, PhD.

**MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS**

- **European Physical Society**
  - doc. Ing. Róbert Riedlmajer, PhD.

- **North-Atlantic Consortium on Non-Oxide Glasses (NACNOG)**
  - doc. Ing. Stanislav Minárik, PhD.

- **IRSN - Institut de Radioprotection et de Sûreté Nucléaire, Cadarache, France**
  - RNDr. Martin Šulka, PhD.

- **International Association of Computer Science and Information Technology IACISIT**
  - doc. Ing. Maximílián Strémy, PhD.

**PUBLICATIONS (MOST IMPORTANT PUBLICATIONS IN 2014)**


ADF JAKÁBOVÁ, Martina - JUROVATÁ, Dominika - BENO, Rastislav - DOHANOLOVÁ, Simona - ZELENAV, Tomáš. Developing the e-learning materials for the concept of “Digital Company”. In Fórum manažera (Forum of manage). ISSN 1336-7773.


AFC TANUŠKA, Pavol - ELIÁŠ, Andrej - VAŽAN, Pavel - ZAHRAĐNÍKOVÁ, Barbora. The nuclear power plant environment monitoring system through mobile units. In World Academy of Science, Engineering and Technology: International science
Conferences:
Marcel Meško, René Heller, René Hübner, Matthias Krause: Influence of the discharge regime on the Ti thin films growth and properties in dc, single pulsed and chopped high power impulse magnetron sputtering. 14th International Conference on Plasma Surface Engineering (PSE 2014), Garmisch-Partenkirchen, Germany, 15/09–19/09/2014
PRIORITY OF THE DIVISION

1. The Division of Communication and Information Systems is a technical-administrative and service Faculty unit which provides procedural, consultative, and informational services in the area of communication and information technology to other organisational units of the Faculty. This division prepares documents for the acquisition, maintenance, and repairs of the Faculty information technology.
2. The Division of Communication and Information Systems is responsible for:
   a) processing and administration of the Faculty computer systems,
   b) provision of on-going maintenance and repairs to devices of the Faculty information technology and infrastructure,
   c) provision of consultation services for the system and the selected application program equipment,
   d) development, innovation, and implementation of technical and program means for the Faculty’s information technology,
   e) organisation of training and short courses for users of information technology, training of application program equipment and operation of the computer network,
   f) creation, development, innovation and distribution of the Faculty’s computer network and its connection to the university network,
   g) provision of IT devices to the Faculty workplaces in cooperation with directors of institutes and heads of divisions,
   h) ad-hoc repairs of technical devices as required,
   i) support for cooperation with the Centre of Information Technology STU and other information workplaces at STU,
   j) provision of suggestions for short-term and long-term plans for the implementation of information technology and the preparation of documents for decisions made by the management of the Faculty,
   k) entrepreneurship activities,
   l) issuance of permissions for connection of devices to the Faculty computer network,
   m) administration of the Faculty servers and components of the Faculty information systems.

PROJECTS OF THE DIVISION


ACTIVITIES OF THE DIVISION IN 2014

- building a database of offers for cooperation with practice,
- Wi-Fi coverage for the student dormitory,
- developing web portals for Faculty needs (www.idssmolenice.sk), dokumenty.mtf.stuba.sk and foto.mtf.stuba.sk), campus.mtf.stuba.sk and new system for student dormitory,
- active help in organising SANET – connection of secondary and elementary schools to the central node of the internet, which is located at the Faculty,
- reconstruction of the IT infrastructure,
- administration of the mobile data centre with server and storage backend technologies,
- network intrusions detection and prevention,
- servers installation and maintenance,
- Wi-Fi access points administration (Cisco WLC),
- implementation of system for net points regulation (LMS),
- management of UPS for servers and data storages,
- administration of CCTV and security system,
- mobile (cellular) and landline phones agenda administration,
- preparation of transition to the active directory for the whole faculty.

MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS

SANET – Slovak Academic Network

This part of Annual Report 2014 was verified by Ing. Jaroslav Otčenáš
DIVISION OF ACADEMIC ACTIVITIES

PRIORITIES OF THE DIVISION

1. The Division of Academic Activities is the administrative-service division of the Faculty which provides administrative and service activities connected with the study and research activities of the Faculty, the foreign relations of the Faculty and the system of quality in the pedagogical process.

2. The Division of Academic Activities is responsible for:

a) recording the student life cycle and related activities for all three study degrees (Bc., Ing., PhD.),
b) processing and administration of admission procedures in all three study degrees,
c) preparing of publicity materials directed to applicants for study,
d) processing of a complex agenda for motivational and social scholarships,
e) recording of research projects and grant activities,
f) organising of business and study travel for the Faculty employees and students abroad,
g) organisation of development support for the international contacts of Faculty employees and students with universities and other foreign institutions, and support of their participation in international programs,
h) organisation of growth in the complex scientific academic qualification of the Faculty employees – including habilitation and inauguration procedures,
i) organising and administration of agendas related to activities for defence of dissertation theses, habilitation and inauguration commissions,
j) provision of a complex agenda for meetings of the Faculty Scientific Board,
k) organisation and administration of the accreditation process and implementation of a system of quality,
l) administration of agendas connected with awards for the Faculty and memberships in scientific communities,
m) organisation of the Faculty academic ceremonies,
n) organisation of activities related to the promotion of companies and presentations of companies with the aim of providing job offers to the Faculty students.

PROJECTS OF THE DIVISION

The Head of the Division, Ing. Jana Štefánková, Ph.D. contributes to the project (2013-2015) "Knowledge-based Faculty for economic practice".

The Head of the Division, Ing. Jana Štefánková, Ph.D. is involved in the National project "Universities as motors of the knowledge-based society development".

ACTIVITIES OF THE DIVISION IN 2014

- Organisation of the International Doctoral Seminar 2014 in Poland
- Organisation of the Students Research Conference at the Faculty 2014
- Job Day 2014
- Organisation of the “Open-house Day at STU MTF”
- Organisation of promotional activities, presentation events and preparation of collated materials for study
- Supporting the "Doctoral Week" event
- Participation at education trade fairs in Brno, Bratislava and Nitra
- Organisation of presentation/promotion activities delivered by companies with the aim of providing job offers to the Faculty students
- Organisation of questionnaire on student satisfaction with study (study conditions, level of teachers – study conditions, teacher qualifications and the quality of education process)
- Cooperation in organising the "New-year’s meeting of employees"
- Maintenance of the web page and publishing information for Faculty employees and students throughout the year.
MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS

The Slovak Academy of Management
Ing. Jana Štefánková, Ph.D.

MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS

SEFI- European Society for Engineering Education
Ing. Jana Štefánková, Ph.D.

PUBLICATIONS


DIVISION OF KNOWLEDGE MANAGEMENT

CONTACT
Head of the Division
PhDr. Kvetoslava Rešetová, PhD.
e-mail: kvetoslava.resetova@stuba.sk
tel: +421915847111

Address
Jána Bottu 25, 91724 Trnava,
Slovak Republic
tel: +421906068300

SECTIONS
Academic Library
Publishing House
Public Relations

STAFF 12

PRIORITIES OF THE DIVISION
1. The Division of Knowledge Management is the technical-administrative and service unit of the Faculty which provides activities and functions in the field of the academic library, publishing and public relations.

2. The Division of Knowledge Management is responsible for:
   a) processes and operations of the academic library which includes: the storage of research and bibliographic information, in addition to coordination and provision of knowledge management advice for the Faculty; storage and registration of qualification theses; the provision of a workplace for the storage of Faculty publications and their references; the provision and processing of information funds according to the Faculty profile and the provision of bibliographic-information services on the basis of user categorisation; administration of bibliographic-information databases related to the academic activities of the Faculty and participation by creating and accessing file catalogues; fulfilment of the role as a specialised research library for the specific fields of the Faculty.

   b) operation of the Faculty publishing house and the provision of editorial activities: implementing the changes of the statute of editorial activity, including administration of anonymous reviewing, mapping the publication space in the publishing opportunities; updating and administering the publishing portal of MTF.

   c) public relations activities of the Faculty: activities related to promotion of the Faculty in the media; responsibility for the website and monitoring of the news; website of the Faculty; schedule providing information on the Faculty events; preparation of the Annual Report; regular announcements in print media; organisational support for events at the Faculty and video-recordings of events; acquisition of the technology museum; update of the MTF photo-gallery portal; innovation of poster display; production of invitations, business cards, leaflets and posters.

   d) acting as a point of contact between the Faculty and the alumni society: activity to support the Bank of Quality - Alumni MTF society.

PROJECTS OF THE DIVISION
Knowledge-based Faculty for economic practice
The Project is established within the Operational Programme of Education and financed from the European Social Fund. ITMS 26110230113

Modern Education for Knowledge Society / Project co-financed from the EU funds.

Time period of the Project: 10/2013 – 9/2015. Principle investigator of the Project:
PhDr. Kvetoslava Rešetová, PhD.

Aims of Project
Developing the tools and partner environment of the knowledge-based Faculty for economic practice
The project is focused on developing the tools and mechanisms for building a partner environment of a knowledge-based Faculty for economic practice. Needs analysis is based on the long-term Faculty goals of increasing the degree of responsibility for knowledge transfer, and development of the knowledge-based society. It concerns the integrity of education and innovations through the development of intellectual capital and knowledge potential of the Faculty. The quality of the knowledge and intellectual potential of the institution as well as the intensity of its development are both associated with knowledge management. Transfer of knowledge represents a review of the status of knowledge in the value hierarchy of the Faculty. Tools for developing innovative forms of the research, development and education results transfer determine the added value of the cognitive and transformation processes at the Faculty. The project maps the outcomes for
the development of collaboration with economic practice and the impact of environment on the collaboration, and simultaneously creates tools for the knowledge transfer into education. The project seeks to increase the quality of education and human resources development in the fields of research and development, in order to achieve continuous adaptation of higher education institutions to the current and future needs of the knowledge society.

**Sustainability of the Project results**

The STU Faculty of Materials Science and Technology is well prepared to provide the wider community of economic practice with the latest information gained in the process of education and research. It has potential for value creation. It develops the means for integration of its activities and relationships with relevant partners, while bearing responsibility for the personal development of PhD students, particularly in terms of their future career societal needs. Increased demand of practice for knowledge is an incentive for the Faculty to streamline the transfer of the research and development results into the economic sphere, so as to improve the motivation of scientists to collaborate with practice, and simultaneously strengthen the Faculty’s traditional mission. The sustainable environment of the STU MTF relationship with economic practice is a firm concept of the Faculty development based on the optimum coexistence of the base and applied research, innovative teaching and effective cooperation between the University and industrial sphere.

**ACTIVITIES OF THE DIVISION IN 2014**

**Building a Database of offers for cooperation with practice**

**Academic Library**
- implementation of the new Information System for Library (Advanced Rapid Library)
- organisation of the Book Week as part of the International Book Day event,
- regular navigation in the electronic information sources.

**Publishing House**
- coordination of the process to add the Faculty journals to the Versita system,
- mapping the publication space in the publishing opportunities.

**MEMBERSHIP OF SLOVAK PROFESSIONAL ORGANISATIONS**

**Slovak Association of Libraries**
– membership of the whole academic library

**Slovak Association of Publishers and Booksellers**
– Office of the AlumniPress

**MEMBERSHIP OF INTERNATIONAL PROFESSIONAL ORGANISATIONS**

**KMPro (Knowledge Management Professional Society)**
PhDr. Kvetoslava Rešetová, PhD.

**ATRIP (International Association for the Advancement of Teaching and Research in Intellectual Property)**
PhDr. Kvetoslava Rešetová, PhD.

**PUBLICATIONS**

Rešetová, Kvetoslava - Václavová, Alena: The value of publishing space. (http://www.ikaros.cz)


Rešetová, Kvetoslava: Partner agreements of STU MTF with economic practice.
In: Transfer. - ISSN 1337-9747. - Vol. 6, No. 2 (2014), pp. 8-9

Rešetová, Kvetoslava: Cooperation with practice at STU MTF in the year 2013.
- ITMS 26110230113.
In: Transfer. - ISSN 1337-9747. - Vol. 6, No. 1 (2014), pp. 20-22


Rešetová, Kvetoslava: STU MTF presentation in MSV.
In: Strojárstvo - Strojírenství. - ISSN 1335-2938. - Vol. 18, No. 11 (2014), pp. 64

This part of Annual Report 2014 was verified by PhDr. Kvetoslava Rešetová, PhD.
PRIORITIES OF THE DIVISION

Division of Economic Activities is the economic and administrative unit of the Faculty, which provides the economic, operative, administrative, and other services related to the Faculty performance, such as the complex specialised financial, accounting, budgetary and fiscal activities necessary for the proper economic functioning of the Faculty in accordance with applicable legislation in the field of business entrepreneurial activities as well as the student hostels and canteen.

The Division:
- Runs Magion the economic information system in modules such as liabilities, receivables, banks, treasury, stocks, travel orders, purchase orders, contracts, budgets and plans;
- Carries out financial control procedures for all financial transactions;
- Bears responsibility for the economical and efficient use of public resources and extra subsidies for the educational, research and investment activities as well as the activities of the Faculty hostel and canteen;
- Monitors the implementation of the current and capital expenditures for individual programmes and is responsible for observing the budgetary discipline;
- Provides the economic data necessary for the Dean and Vice-Deans’ managerial activities;
- Methodically manages other divisions and departments of the Faculty and cooperates in dealing with economic problems of the Faculty;
- Develops inventories and accounts closings in accordance with the applicable legislation;
- Prepares the Annual Report on the Faculty economy and statistical and economic analyses;
- Co-operates in clearing the financial reports of research projects;
- Provides consultancy and carries out clearing of the Structural Funds projects;
- Participates in establishing the Faculty internal regulations and directives;
- Archves all the tax and accounting documents.

ACTIVITIES OF THE DIVISION IN 2014

- Preparing reports on drawing funds for various purposes;
- Preparing legislative documentation for the economic performance of the Faculty;
- Preparing financial settlement of conferences and the entrepreneurial activity projects.

This part of Annual Report 2014 was verified by Ing. Svetlana Mihoková
PRIORITIES OF THE DIVISION

1. The Division of Estate Activities is a technical-administration unit of the Faculty, which provides operative, administrative, and other services related to the proper Faculty and division operation.

2. The Division of Economic and Estate Activities is responsible predominately for the logistic and controlling functions of the Faculty, maintenance of the registry system of the Slovak University of Technology at the Faculty.

ACTIVITIES OF THE DIVISION IN 2014

- repair and maintenance of the engine room at the swimming pool
- repair of heat exchanger in “Z” pavilion
- repair of substation in the Heavy Laboratories
DIVISION OF PERSONNEL AND ADMINISTRATION

CONTACT

Head of the Division
Ing. Jaroslava Ďurišová

e-mail: jaroslava.durisova@stuba.sk

tel.: +421918646017

Address: Paulínska 16, 917 24 Trnava, Slovak Republic

tel.: +421906068120

SECTIONS

- Dean’s Secretariat
- Personnel Section
- Section of Employment and Economic Development
- Payroll Section (Wages and Salaries)
- Section of Safety & Health Protection at Work, Civilian Protection and Fire Safety
- Section of Security Systems

STAFF

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PRIORITIES OF THE DIVISION

1. The Division of Personnel and Administration is the administration-service unit of the Faculty. It is responsible for securing all the administrative and service activities connected with the hiring and rewarding of the Faculty employees, social and health insurance of employees, recording and processing of income issues, activities of the Dean’s secretary office and the security systems of the Faculty.

2. The Division of Personnel and Administration is responsible for:
   a) the personnel records of the Faculty employees,
   b) preparing a list and the structure of obligatory documentation which is processed by the central Division of Personnel and Administration and particular divisions and workplaces of the Faculty it has a right to control,
   c) operation of an information system for personnel work including administration of a system of the workplaces at the Faculty,
   d) processing a system for remuneration of employees including preparation of documents for the wage policy of the Faculty,
   e) preparation and organisation of interviews for the work positions of leading employees at the Faculty and pedagogical employees at institutes,
   f) activities according to the law on protection of personal data, operation of the Dean’s office,
   g) Organisation of Safety & Health Protection at Work, Civilian Protection and Fire Safety.

ACTIVITIES OF THE DIVISION IN 2014

- Charity event: Christmas Bazaar
- Management of the attendance system ESED
- Co-organisation of the Faculty events

This part of Annual Report 2014 was verified by Ing. Jaroslava Ďurišová
PRIORITIES OF THE DEPARTMENT

The key tasks and aims of the Department include:
- professional preparation of the Faculty students in the field of human and social sciences in order to support their development and enhance and develop a social dimension to the engineering students’ personalities;
- provision of professional English language training;
- physical training and sport to enhance the health and wellbeing of the Faculty students;
- preparation of students majoring in the study programme of Personnel Policy in Industrial Plant in the field of human and social sciences.

ACTIVITIES OF THE DEPARTMENT IN 2014

<table>
<thead>
<tr>
<th>Date</th>
<th>Title of event or activity at the Department in 2014</th>
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</thead>
<tbody>
<tr>
<td>8-9 March</td>
<td>40th year of Grand Prix Trnava – International swimming competition</td>
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<tr>
<td>22 April</td>
<td>Swimming competition for MTF students</td>
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<tr>
<td>23 April</td>
<td>Volleyball tournament for MTF employees</td>
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<tr>
<td>9 December</td>
<td>Football tournament for MTF students</td>
</tr>
<tr>
<td>10 December</td>
<td>Table tennis tournament for MTF students</td>
</tr>
<tr>
<td>10 December</td>
<td>Swimming competition for MTF students</td>
</tr>
<tr>
<td>11 December</td>
<td>Volleyball tournament for MTF employees</td>
</tr>
</tbody>
</table>

Within the Development of pedagogical competences of STU MTF doctoral students project the following was organised:
- preparation and publishing of textbooks and exercise books for the course (Jan-Mar 2014)
- organisation and delivery of the 6 modular courses (March 2014)
- organisation of Conference International Conference on Development and Implementation of Academic Competencies of Ph.D. students of Technical Sciences (24 April)
- publishing of Conference proceedings (May 2014)

October-November UNIcert® II and III course

Dies Iovis Occurrusus – Thursday meetings once a month, providing space for sharing interesting information presented by experts in the scientific, cultural and social fields.

BACH (Rich and Poor) – the project oriented on the enhancement of students’ financial literacy (in cooperation with PartnersGroup and Pioneer Investments.)
PROJECTS OF THE DEPARTMENT IN 2014:

VEGA 1/0226/12 Correspondence of Ján Kvačala 1860-1934

KEGA (026STU-4/2012) Students of Slovakia at the Prague and Brno technical universities in the interwar period
Research period: 2012-2014. Principle investigator: L. Bernát. The project studies the social, confessional and nationality structure of the students of Slovakia at the Prague and Brno technical universities, as well as formation of technical intelligentsia in Slovakia in the interwar period.

KEGA (052STU-4/2013) Application of the standards of critical thinking in the innovation of the subject “Introduction into scientific work at STU”
Research period: 2013-2015. Principle investigator: M. Bednáriková. The project is focused on the innovation of the subject “Introduction into scientific work at STU”, accentuating the method of systems approach towards the development of critical thinking and research competences within Master’s study. Proposal of the standard system for the field of critical thinking development and selected cognitive abilities of engineering university students, as well as the framework for their evaluation are in compliance with the European Qualifications Framework and the National Qualifications Framework.

ESF: Development of pedagogical competences of the STU MTF doctoral students (ITMS project code 26110230023). Research period: 05/2010-06/2014. Investigators: K. Kováč, P. Halada. The strategic aim of the project is the development of the human potential in the research and innovation via postgraduate study and specialised preparation of researchers while networking the activities of universities, research centres and enterprises. The project goal is to develop pedagogical competences and support academic development of PhD students. Fundamental activities are the complete pedagogical and psychological training of the STU MTF PhD students for their pedagogical activities in tertiary education institutions. Another objective is the preparation and implementation of the modular course “Teacher training in the university pedagogy for STU MTF PhD students”. The development of pedagogical competences is connected with the preparation and implementation of the “Cap-stone modular course”.

ESF: Implementation of an internal system of education quality assurance (ITMS project code 26110230042). The aim of the project is to design and verify the system of objective quality assessment and effective and purposeful education in order to achieve continual adaptation of tertiary education institutions to current and future needs of knowledge society. It will enable the introduction of the system of direct quality measurement of tertiary education, while improving the outputs and approximating the educational system to the society needs. The project objectives are:
- to design and verify the system of objective quality assessment of education in the bachelor study programmes in STU MTF;
- to design and verify the measures aimed at eliminating the information disproportion in the bachelor study programmes in STU MTF;
- to design and verify the measures for increasing the education quality in the bachelor study programmes in STU MTF;
- to design and verify the evaluation of measures in the bachelor study programmes in STU MTF.
Research period: 01/2012-06/2014

SUBJECTS GUARANTEED BY THE DEPARTMENT IN 2014:

Bachelor Thesis
History of Technology and Vocational Schooling
European Integration Processes
English Language I, II, III, IV
English Language for PhD students
Industrial Sociology
Prognostics
Psychology of the Work of a Manager
Social Ecology
Social Communication
Social Policy
Sociology of Education
Sociology of Work

MEMBERSHIP OF PROFESSIONAL ORGANISATIONS

CASAJC
(Czech and Slovak Association of Language Teachers at Universities)
Gabriela Chmelíková
Emília Mironovová
Róbert Soták
Ludmila Hurajová

UNIcert (Foreign language certificate for universities)
Gabriela Chmelíková

Czech and Slovak Association of the School Psychologists
Silvester Sawicki

CEDOFOP
(European Centre for the Development of Vocational Training)
Silvester Sawicki

Association of Process-oriented Psychotherapy in the Slovak Republic
Silvester Sawicki

Slovak Scientific Society for Physical Education and Sport
Rastislav Hlavatý

Slovak Swimming Federation
Rastislav Hlavatý

Slovak Tennis Association
Elena Lukačovičová

Slovak Historical Society
Libor Bernát

Slovak Pedagogic Society
Libor Bernát
PUBLICATIONS (THE MOST IMPORTANT PUBLICATIONS IN 2014)

University textbooks published by the domestic publishers


Workbooks


This part of Annual Report 2014 was verified by Mgr. Gabriela Chmelíková, PhD.
ABBREVIATED ABSTRACT IN SLOVAK LANGUAGE
SKRÁTENÝ ABSTRAKT V SLOVENSKOM JAZYKU

Annual Report 2014 – Prostredie vzdelávania na fakulte

PREDSTAV


Aké priority bude mať nové vedenie fakulty?

- V prvom rade je to úspešné dobudovanie komplexu univerzitného vedeckého parku CAMBO
- Preferovanie budovania prístrojovej a ľudskej vedeckovýskumnej základne v rámci štrukturálnych fondov a najmä etablovanie sa v projektoch HORIZON 2020 ako akceptovateľného partnera pre európsky a svetový výskumný a vzdelávací priestor
- Udržať A-hodnotená fakulty v procesoch komplexnej akreditácie a je postavenia v rámci STU
- Podporovanie spolupráce s praxou
- Výrazné zvýšenie rozsahu výuky

Moje motto do nového obdobia ostáva nezmenené tak, ako som ho deklaroval pri voľbe dekana: Šíriť dobré meno fakulty kvalitnou poctivou pracou.

prof. Dr. Ing. Jozef Peterka
dekan fakulty

VEDENIE FAKULTY

Zloženie akademických funkcionárov. V roku 2014 prišlo k zmene na základe volieb dekana dňa 28. 05. 2014 v súlade s Vykonávacími predpismi pre voľbu kandidáta na dekana MTF STU a Harmonogramom voľby kandidáta na dekana MTF STU. Za dekana MTF STU bol zvolený prof. Dr. Ing. Jozef Peterka.

ÚSTavy FAKULTY, PRACOVISKÁ FAKULTY

- Ústav materiálov
- Ústav výrobných technológií
- Ústav výrobných systémov a aplikovanej mechaniky
- Ústav priemyselneho inžinierstva a manažmentu
- Ústav bezpečnosti, environmentu a kvality
- Ústav aplikovanej informatiky, automatizácie a matematiky
- Ústav výskumu progresívnych technológií
- Odbor komunikačných a informačných systémov
- Odbor akademických činností
- Odbor poznatkového manažmentu
- Odbor ekonomických činností
- Odbor prevádzkových činností
- Personálny odbor
- Lektorský kabinet

VEDECKÁ RADA, AKADEMICKÝ SENÁT


ROZVOJ


VZDELÁVANIE

Akreditované študijné programy, Systém štúdia, Štatistické ukazovatele za rok 2014 v oblasti vzdelávania, Kvalita vzdelávania, Ocenenia študentov

VÝSKUM A ZAHRANIČNÉ VZŤAHY


VÑUTORENÉ VZŤAHY


ŠTRUKTÚRA INFORMÁCIÍ O PRACOVISKÁCH

Kontakt, Stav zamestnanca, Počet študentov a absolventov na ústavoch, Študijné programy garantované ústavom, Aktivity ústavu v roku 2014, Profil absolventa ústavu, Zoznam predmetov garantovaných ústavom, Záverečné práce na ústave, Oblast výskumu ústavu a jeho výskumná charakteristika, Oblast expertise ponúkaných ústavom, projekty riešené v roku 2014 na ústave, Zahraničné pracovné cesty členov ústavu v roku 2014, Členstvo v domácich a zahraničných organizáciách, Výber publikačnej činnosti za rok 2014,
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