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SLOVAK  
UNIVERSITY  
OF TECHNOLOGY  
IN BRATISLAVA  
Faculty  
of Materials  
Science  
and Technology

ANNUAL  
REPORT  
2010

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## **Annual Report 2010**

Faculty of Materials Science and Technology Slovak University of Technology (FMST SUT)  
Paulínska 16, 917 24 Trnava, Slovak Republic

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FACULTY  
OF MATERIALS  
SCIENCE  
AND TECHNOLOGY



## PREFACE



Ladies and gentlemen,

To begin with, let me wish you all sound health, lots of personal and professional achievements, and peace for your families and at your working places as well.

I would also like to take this opportunity, in hindsight, to summarize the last year. And, I wish to present a rough outline at least of what my vision of the faculty for this year is and what necessities are needed in order to fulfil it.

Since the 1st of October 2010, the faculty has not only been directed by new management, but also by some new positions of chief managerial staff in the system that have been opened, these being at the Institutes of Professional Pedagogy and in Administration Divisions. All the controlling positions at the faculty have been finally occupied after the challenging and complex selection procedures. I wish to believe, and I will gladly allow myself to be convinced, the fact that the keen and independent selection committees chose properly. I am delighted to say that our faculty management team has been extended to include two ladies – vice-dean Mrs. Vidova and the manager of the economic and administrative division – Mgr. Nemetzova. There are not yet any women scientific workers in the position of institute director. However, the faculty's Scientific Board has changed positively towards gender diversity. Personally, I am convinced that these are more than good steps concerning the gender equality at the Faculty of technology, and we want to benefit from its positive aspects in the future.

The review of 2010, from my point of view, is connected with extraordinary satisfaction. The qualification structure of the faculty has markedly improved. Besides the two or three exceptions that are still being tolerated for different reasons, a team consisting of more than two hundred teachers operates at the faculty, all with the minimum qualification of a Ph.D. All of this assures me that, along with the planned reduced number of matriculated students within the first year of bachelor's study – fewer than 1000 – we will meet the last criterion without any difficulty. My delight is even greater due to a lack of concerns about studying at the Faculty last year.

The first degree is characterised by 2.6 applicants for one study place; the second degree has 1.7 applicants per study place; and the third degree has 2.5 aspirants for one study place. Within this context, let me congratulate our two new professors at the Faculty – Professor Milan Marônek and Professor Peter \_ugár, who will be given the letters of appointment by the president at a near date. The appointment is even more pleasant due to the fact that both professors are in the “young, active” academic age. Presently, six guest professors are working at the Faculty, two of them from abroad, and there are another 15 professors from Slovakia and Germany working part-time, from 10 to 50 percent.

Our strength is definitely our fruitfulness in grant resource fundraising from the structural funds. Along this line, I can say without exaggeration that we are the most successful school and research institution in Slovakia. The Faculty, first of all, completed successfully the excellence centre project within one year in Slovakia. After nearly two decades, using European funds and the distinctive financial contribution of the University, as well as our own resources, we put into operation a new building – the building of the 5-axial machining excellence centre which was built in the extremely short time of less than three months.

Additionally, following the medium-term plan – to concentrate all the activities of the Faculty in the campus on Bottova Street – we have completely renovated the energy and media distribution networks (electric power, heat, water, canalisation, etc.) If we begin to build in the campus again, and I believe this will happen soon, the problem of connecting the new objects to the media will be already solved. Interestingly enough, during the last year we invested approximately 2.2 million EUR from all sources - university, faculty and structural ones – into the buildings and repairs.

It is not possible to sit on two chairs at the same time. If we have already decided to create, modernize, and reconstruct our scientific and research base at the Faculty, there is now not much time left for more active participation in the scientific and research projects through the agencies like VEGA, APVV, etc. We hold an opinion that if we optimally use the European structural funds (and we are successful in obtaining the projects, as we have been so far), then, with the new equipment base, we cannot have any difficulties with participating in the European research area by way of joining FP7, FP8 or EUROATOM in the future. To do so, we are now creating new scientific and research workplaces and solving the qualification concerns of our scientific and research workers. According to our calculations, we need to create approximately 50 new positions for scientific and research workers by the end of the structural fund drawing period. It is also necessary to occupy these positions by taking employees with a high qualification structure, similar to that of the teaching staff.

In connection to this, let me point out one more thing. Administrative and organisational division employees were also able to gain and solve successfully the projects at this Faculty. Two projects from structural funds are being

completed by the Division of Knowledge Management. Employees of the Division of Academic Activities, Division of Communication and Information Systems, and Centre of Technologies Transfer are actively participating in project solution teams as well as in the project FP7.

It is an honour to thank the managers of all administrative divisions of the Faculty as well as their teams for meeting the challenge of the Faculty's management to professionalize and implement internationally comparable standards of their work within everyday practice. Certainly, the mobility and constant education of our administrative managers present a great contribution to all this. The student and staff service offered by the Faculty is nowadays comparable to other highly-developed institutions.

Doctoral study at the Faculty (300 Ph.D. students at present) is becoming one of the attributes important for joining the rest of the world. We present a workplace where even more foreign students meet. It is a pity that we could not enrol more aspirants for full-time doctoral study due to the assigned number of places. During the last academic year, 62 students were enrolled for the first year of study, mostly internal graduates from our Faculty – these are results from which not only our Faculty presently benefits, but also our whole Alma Mater.

In 2010, our Faculty held the world conference of IGIP-SEFI, the two world professional organisations dealing with engineering education quality. More than 400 participants from all continents voiced great satisfaction with the quality of organisation and professional standard. We are convinced that the conference participants will spread the reputation of our institution, our town and region far beyond the borders of Slovakia.

Ladies and gentlemen,  
We could not imagine our successful activities without our partners from the state, public and the private sectors. The cooperation is certainly beneficial for all parties. Let me name at least the institutions from Slovakia and abroad that we consider to be our crucial partners: the region and town of Trnava, JAVYS, VUJE, Beakert, DELCAM, FZD, IFW, TU Ilmenau, TU Dresden, University of Miskolc, University of Zagreb-Varazdin University of Applied Sciences Koethen, University in Kecskemeth, Izhevsk State Technical University, University of Martha Abreu Santa Clara in Cuba and also many other partners of the University from Germany, Austria, Poland, Croatia, Serbia and the Czech Republic.

During the last year, we made a determining step together with German and Hungarian partners from the University in Magdeburg and the University of Miskolc in terms of establishing cooperation with our Cuban partners and friends from Las Villas University in Santa Clara. We also started to communicate with Iranian partners.

Of course, there is much more to say about this place. However, it is more important to remind briefly of what will come and what we want to improve or achieve to our benefit within the Faculty in the coming year.  
- to continue in the development activities, mainly in keeping with the ambitious plan of

the campus building in Bottova Street  
- to set conditions and to increase the pressure for the purpose of a quantitative and qualitative development of scientific and research activities, to involve all the students at the third level into the grant research within the common European research area  
- to support and develop a system of quality at the Faculty with priority and emphasis on the quality improvement of the pedagogic process, to gradually rebuild the relationship of “student-teacher” towards a partnership  
- evaluate the accreditation criteria for fulfilling and corresponding with the passed evaluative period and to make all the necessary corrections in such a way that in the next accreditation in 2013, our Faculty will be above standard within the Slovak University of Technology  
- we already know today that the successful faculties and universities of the future need to participate in science and research projects within the common European research area – this is the principal challenge for all our institutes, to participate in the project preparation FP8 with foreign partners within the given time span – the structural funds will be exhausted in two years.

To sum up, ladies and gentlemen, it is my pleasure to thank all the sponsors of the Faculty who, within the last year, donated more than 100 000 EUR for the benefit of the Faculty's activities, and so contributed to the excellent course of the world conference IGIP-SEFI. Moreover, they contributed to the teachers' and researchers' mobility, and last but not least, they enabled the purchase of technology equipment.

Ladies and gentlemen,  
We thank our sponsors, curators, advisory council members and all partners for the constructive collaboration in the year 2010 and we are happy to fulfil new tasks, challenges and tackle future projects together. I would like to wish you all the best in 2011 again concerning your work and also your personal life.

Oliver Moravčík, Professor, PhD  
Dean of the Faculty





# MANAGEMENT OF THE FACULTY

**Oliver Moravčík, Professor, PhD.**  
Dean of the Faculty



**Vice-deans:**

**Jozef Peterka, Professor, PhD.**



Development  
Information Technologies  
Know-how Transfer  
Prognostics

**Mária Mišútová, Assoc. Professor, PhD.**



Bachelor Degree  
Accreditation of Bachelor Degree  
Motivation Scholarship  
Study Promotion

**František Hornák, Assoc. Professor, PhD.**



Engineering and PhD Degrees  
Accreditation of Engineering and PhD Degrees  
Student Social Affairs  
Education Quality, Educational Process Inspection

**Peter Grgač, Professor, PhD.**



Research  
International Relations  
Professional Development of Academic Staff

**Helena Vidová, Assoc. Professor, PhD.**



Internal Relations  
Public Relations  
Security System  
Publishing Activity  
Social Programmes for Staff  
ALUMNI

# INSTITUTES OF THE FACULTY

Institute of Materials Science  
Department of Materials Engineering  
Department of Physics

Institute of Production Technologies  
Department of Welding  
Department of Machining and Assembly  
Department of Foundry  
Department of Forming

Institute of Production Systems and Applied Mechanics  
Department of Applied Mechanics  
Department of Technological Devices and Systems

Institute of Industrial Engineering, Management and Quality

Institute of Safety and Environmental Engineering  
Department of Environmental Engineering  
Department of Safety Engineering  
Department of Industrial Safety

Institute of Applied Informatics, Automation and Mathematics  
Department of Mathematics  
Department of Applied Informatics and Industrial Automation

Institute of Engineering Pedagogy and Humanities  
Department of Engineering Pedagogy and Psychology  
Department of Humanities  
Department of Professional Language Communication  
Department of Physical Education and Sports

# DETACHED WORKPLACES

Nitra Detached Workplace  
Brezno Detached Workplace  
Komárno Detached Workplace  
Dubnica Detached Workplace

# DIVISIONS OF THE FACULTY

Division of Academic Activities  
Registrar's Department  
Section of Research and International Relations

Division of Knowledge Management  
Academic Library  
Publishing House  
Section of Public Relations

Division of Economical and Estate Activities  
Section of Economy  
Section of Operation and Maintenance  
Section of Estate Management  
Student Hostel and Canteen

Division of Communication and Information Systems  
Section of Information Systems Operation  
Section of System and Technical Services

Division of Personnel and Administration Activities  
Department of Personnel  
Department of Work Economy  
Department Wages and Salaries  
Department of Safety and Health Protection at Work, Civilian Protection, Fire Safety  
Department of Security System

Centre for Technologies Transfer

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Velíšek Karol, Professor, PhD.

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UTB Zlín, ČR

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Lumnitzer Ervín, Professor, PhD.  
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Švrček Daniel, PhD., visiting prof.  
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Faculty of machining, TU Košice  
Faculty of machining, TUKošice  
Faculty of machining ŽU, Žilina  
ÚMMS SAV Bratislava  
Agrolet s.r.o. Bratislava  
FVT TU Prešov

# ACADEMIC SENATE

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### Chair of Academic Staff Chamber:

Peter Schreiber, Assoc. Prof. PhD.

### Chair of Student Staff Chamber:

Michal Ondruška, Bc.

## Academic Staff Chamber

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Michal Ondruška, Bc.  
Michal Sroka, Bc.  
Branislav Martančík, MSc. Eng.  
Kristína Kašníkova  
Ondrej Kimlička  
Marián Pluhár





# DEVELOPMENT AND FINANCIAL MANAGEMENT



## DEVELOPMENT OF THE FACULTY IN YEAR 2010

FMST SUT develops, protects and spreads knowledge via research, artistic and other creative activity. The faculty prepares experts with the highest education in technical, technological, information, technical-economic fields. It enables actualisation and acquisition of knowledge throughout the lifespan, and it supports development and improvement of society as a unit. The main task of the FMST SUT regarding long-term intentions is to collect, improve, save and spread of knowledge in areas of science, technology, art and culture, and it is based on university traditions and reactions on the last international inputs in science, art and education. The long-term intention of FMST SUT is to characterise the faculty as a modern research part of the university, which follows the main tasks of European universities based on knowledge production via research, knowledge distribution via teaching, information and communication technologies and application of knowledge in innovations. The aim should be technological innovations, sustainable economical growth and social stability.

Special attention in the long-term intention of development of the FMST SUT is the creation of synergy as a basis for application of integrated capacities of the FMST SUT which present a sufficient critical mass of research and pedagogical potential for its competitiveness in the European and world research and academic areas. The FMST SUT, as one of the European universities, wants to play an important role in the next development of Europe into the form of a Europe of knowledge and knowledge-based economics and society. This aim is supported by an internal intensification into the faculty structure as well as an external one in accordance with the Bologna process and the aims of the Lisbon strategy.



*Discussion with Minister of Education on development of the faculty*

The main pillars of the long-term intentions of development of FMST SUT are characterised by the line of its mission as follows:

### SCIENCE, TECHNOLOGY, ART

To define and develop the main directions of research at the faculty.

### EDUCATION

To rationalize the teaching process.

To create suitable conditions to keep and as well as to increase interest of students to study at the faculty.

To prepare material for accreditation of study programmes in range of a complex accreditation.

To make an efficient evaluation system of teaching quality.

### INTERNATIONAL RELATIONS

To define, fulfil and develop priorities of area and content orientation of international relations of the MTF SUT.

### INFORMATION TECHNOLOGIES

To use in an active way the implementation project of Academic Information System

(AIS) at the FMST SUT.

To create special computer labs in faculty pavilions.

To focus on other ways of e/learning education.

### ASSURANCE OF QUALITY

To provide observation and evaluation of teaching quality with the aim of keeping student interest in study at the FMST SUT as an offered quality preparation for successful professional activity of faculty graduates.

### PUBLIC RELATIONS

To present regularly the important activities of faculty in the university journal (Spektrum), regional press, MTT and in own E-medias of the faculty.

To keep a high standard of cooperation of the faculty with town organs by organisation of events of town or regional importance.

To prepare the faculty strategy for recruitment at secondary schools.

To intensify and spread the activity of ALUMNI.

### FINANCES, MANAGEMENT, STRUCTURE

To respect and implement internal university legislation.

### SOURCES

To search systematically for an optimal composition of multi-sources finances in connection with particular conditions and requirements for their attainment.

### QUALITY MANAGEMENT

To implement and keep a system of quality at the faculty.

### SERVICES

To create an offer for practice in Slovak and English and inform on the web page.

To develop cooperation especially with industrial plants in Trnava and in the Trnava self-government region.

### HUMAN RESOURCES

To use in an effective way human resources to be successful in competition and to gain sufficient financial sources via research and other projects.

To study, evaluate and optimize a structure of work positions, qualification structure and productivity of work.

### PRIORITIES IN INVESTMENT AREA

A strategic intention of building use of FMST SUT.

Modernization of lecture halls and classrooms. Renovation of social facilities in the buildings of FMST SUT.

To support the modernization and development of existing innovative high-tech laboratories of FMST SUT and to analyze possibilities for new labs.

### Connection to the Long-term Intention of State Research and Technical Policy to the year 2015

Solving of the projects relates directly with the Long-term Intention of the State Research and Technical Policy to the year 2015. The category **6.1.4 Knowledge technologies with support of information and communication technologies** defines clearly that the development of technologies which help to supply, classify, interpret and implement information, is a needed condition of successful progress of knowledge society. A higher attention should be paid to the development of knowledge technologies with application of automated complex. The actual projects reflect in their aims **basic challenges of the long-term intention**, they are complete solutions for creation of knowledge organisation. One of the most important aims of the long-term intention, except for provision of sufficient source for support of science and technology, is determination of priorities of research where development of knowledge society is one of the crosscutting objectives. The projects correspond to the area of **4.2 Area of technical infrastructure of research** which underlines building and operation of a virtual net to support elementary services for community research. They define ways and mechanisms of knowledge transfer and they solve the question of support of research in organization on base of verification of outputs.

FMST SUT **has invested in the area of Information communication technologies (ICT)**: Creation of LAN FMST SUT net- National node, modernization of PC classes and PC pools, creation of technology of future „thin client“, creation of modern printing system, implementation of ICT to classes.



*PC pools for students*

Portfolios or outputs for development of the faculty creates activities which were a part of the following projects in the last period:

PROJECT TITLE	APPROVED AMOUNT OF NON-REFUNDABLE FINANCIAL DOTATION (NFD)
<b>List of approved applications for NFD (OPVaV - 2008/2.1/01-SORO)</b>	
1. Center for development and application of progressive diagnostic methods in the processing of metal and non-metal materials	1 326 740,45 €
2. Center of Excellence of 5-axis machining	1 325 562,45 €
<b>List of approved applications for NFD (OPVaV - 2008/5.1/02-SORO)</b>	
3. Improvement and modernising of teaching technical and information-communication infrastructure of workplaces at SUT	4 879 291,45 €
<b>List of approved applications for NFD (OPVaV - 2008/2.2/01-SORO)</b>	
4. Center of knowledge organisation of intellectual property	299 178,75 €
5. Laboratory of flexible production systems with robotized maintenance for area of non-design production	459 705,00 €
6. Hybrid electrical source for technical-advisory laboratory of application and propagation of renewable energy sources	445 110,82 €
<b>List of approved applications for NFD (OPVaV - 2009/2.1/02-SORO)</b>	
7. Center of excellence for development and application of progressive diagnostic methods in the processing of metal and non-metal materials	2 643 881,82 €
8. Center of excellence for 5- axis machining – experimental base for high-tech research	2 631 526,31 €
<b>List of approved applications for NFD (OPV - 2009/1.2/01-SORO)</b>	
9. Knowledge regulated tool system of graduate career observation in integration process to the EU	386 621,50 €
10. Development of pedagogical skills of PhD students at FMST SUT	360 585,80 €
<b>List of approved applications for NFD (OPVaV - 2009/2.2/03-SORO)</b>	
11. VÚJE, a.s. Increase of energy safety of the Slovak Republic	1 999 975,06 €
<b>List of approved applications for NFP (OPVaV - 2009/2.2/05-SORO)</b>	
12. MIKON, s.r.o. Industrial research silentblocks for overloading by extreme temperatures in area of industrial appivcation	1 569 769,50 €
<b>List of approved applications for NFP (OPVaV - 2009/5.1/03-SORO)</b>	
13. II. stage of complex modernising of education and information-communication infrastructure of workplaces of SUT	5 526 086,59 €

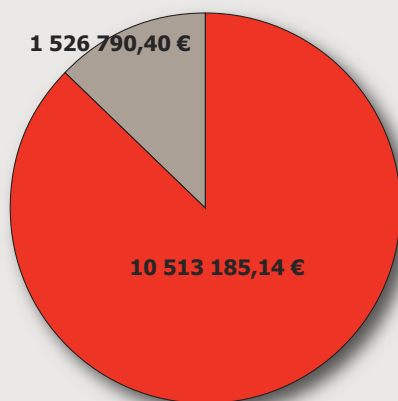
## FINANCIAL MANAGEMENT OF THE FACULTY IN YEAR 2010

FMST SUT spent resources for its main activities in accordance with the rules of economy and efficiency for budget decisions. Resources in the year 2010 were as follows (except for resources from the structural funds of the EU):

• **Additional financial resources together (€) 10 513 185,14**

- Pedagogy 7 780 727
- Scholarships of PhD students 882 127
- Scholarships of students from abroad 1 725
- Social scholarships 160 243
- Motivation scholarships 200 326
- Catering of students 44 553
- Research 560 251
- Projects VEGA 164 519
- Projects KEGA 51 801
- Projects APVV 163 944,14
- Projects DAAD 1 320

• **Non-grant resources (gifts, profits,...) (€) 1 526 790,40**



- Additional financial resources
- Non-grant resources



Sign of the Centres of Excellence



Opening of the hall of the Centre of Excellence 5-axis machining





## ACCREDITATIONS





## ACCREDITATIONS

The Faculty of Materials Science and Technology is accredited as a university type of institution. In 2010, through the complex accreditation, the faculty gained the right to give the academic title "bachelor" to the graduates of 10 study programmes, the academic title "engineer" (corresponding to the master degree) to the graduates of 13 study programmes, and the academic title "philosophiae doctor" to the graduates of 9 study programmes in both study formats, full-time and part-time.

### ACCREDITED STUDY PROGRAMMES AT THE FACULTY

#### Accredited study programmes – Bc.

- Applied Informatics and Automation in Industry
- Material Engineering
- Production Devices and Systems
- Computer-Aided Production Technologies
- Production Technologies
- Industrial Management
- Personnel Work in Industrial Plant
- Quality of Production
- Occupational Health and Safety
- Teaching Practical Subjects in Engineering Majors

#### Accredited study programmes – Ing.

- Applied Informatics and Automation in Industry
- Materials Engineering
- Processing and Application of Non-metals
- Production Appliances and Systems
- Machining and Assembly
- Computer-aided design and production
- Forming
- Welding
- Industrial and Art Folding
- Industrial Management
- Integrated Safety
- Teaching Specific Engineering Subjects
- Engineering of Production Quality

#### Accredited study programmes – PhD.

- Process Automation and Informatization
- Materials Engineering
- Processing and Application of non-metals
- Production Devices and Systems
- Industrial Engineering
- Integrated Safety
- Machining Technology and Materials
- Didactics of Technical Professional Subjects
- Engineering of Production Quality

### STUDY SYSTEM AND ORGANISATION

The credit system introduced in SUT has been implemented in all three degrees of university education at FMST SUT, in compliance with the law and accreditation within the defined standard length of study for both full-time and part-time study formats.

**Degree 1:** bachelor studies, completed by granting the academic title "bachelor" - Bc. Having successfully passed the State exam and gaining the academic title of "bachelor" (Bc.), the graduates can either continue to study in degree 2, or leave the Faculty.

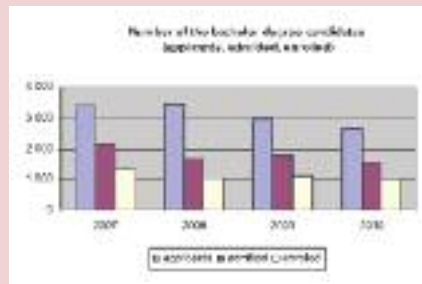
**Degree 2:** master studies, accomplished by gaining the academic title of engineer – Ing. (corresponding to MSc.)

**Degree 3:** doctorate studies– both full-time and part-time formats, while the defined standard length of study in full-time format is 3 years and in part-time format 5 years. The study is accomplished by gaining the academic title of "philosophiae doctor" – PhD.

All of the above mentioned programmes can be studied either full-time or part-time, or externally in the case of PhD study.

### INTEREST IN STUDY

The Faculty has had quite stable interest in study within individual degrees. A decrease in the number of the students admitted and enrolled was due to a change in financing of universities by the Ministry of Education SR, and consequently the changed policy of the Faculty's management policy.



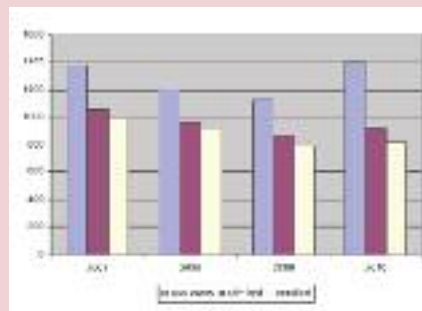
**Graph No. 1.**

Number of the bachelor degree candidates (applicants, admitted, enrolled) within the last four years

#### Admission procedure varies according to the degree.

The admission procedure for the bachelor degree is based on the criteria of the applicant's secondary school results, i.e. without entrance examination.

Besides the results from the bachelor degree, the admission procedure for the master degree considers the results of the entrance examinations in 3 profile subjects within the programme studied.



**Graph No. 2.**

Number of master degree candidates (applicants, admitted, enrolled) within the last four years

Besides the FMST SUT Bc graduates interested in master studies, there is a high number of candidates from other universities. (Tab. No. 1)

**Tab. No. 1** Master degree candidates: graduates of FMST SUT and other universities in the year 2010

Applicants	FMST graduates	1 012
	From other universities	395
Total		1 407
Enrolled	FMST graduates	650
	From other universities	164
	Total	814

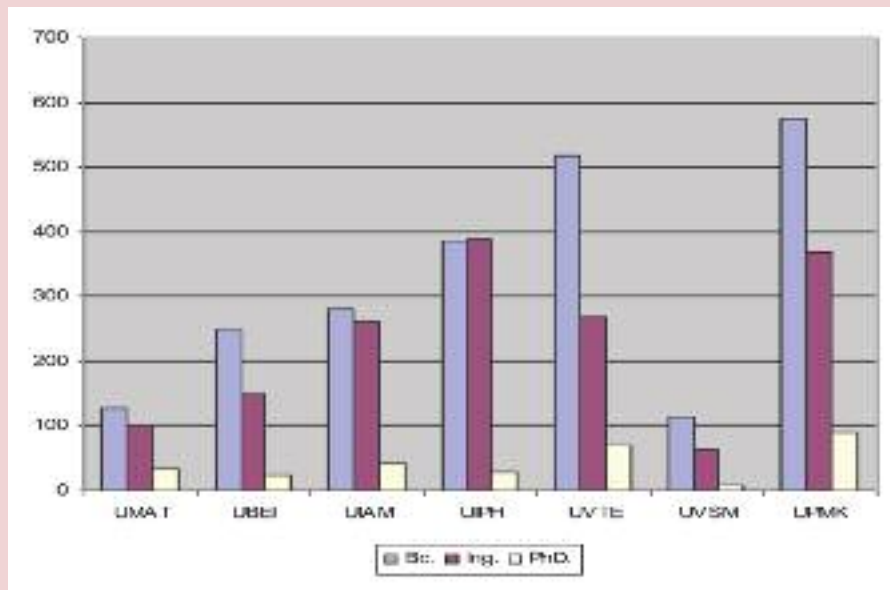
The admission procedure for the doctorate degree is comprised of the entrance examination consisting of an English language test and a discourse regarding the chosen topic of the doctorate thesis.

**Tab. No. 2** Number of PhD candidates in the last three years

	2008	
	Full - time	Part - time
applicants	61	52
enrolled	59	33
	2009	
	Full - time	Part - time
applicants	138	38
enrolled	99	24
	2010	
	Full - time	Part - time
applicants	119	33
enrolled	36	26

The number of fulltime PhD students (Tab. No. 2) is influenced by the financial policy of the Ministry of Education SR, where the number of scholarships allotted to a university is based upon the criterion of the university's achievements in research (domestic grants, foreign grants, internal PhD candidates having passed the dissertation exam, number of PhD graduates and a share of publication activity).

Study and teaching are guaranteed by particular institutes of the faculty. Every institute provides all three degrees of education. Numbers of students at particular institutes are illustrated in Graph 4.



**Graph No. 4:** Number of students in individual Faculty institutes by 31/10/2010

**Abbreviations used:**

- UMAT - Institute of Materials
- UBEI - Institute of Safety and Environmental Engineering
- UIAM - Institute of Applied Informatics, Automation and Mathematics
- UIPH - Institute of Engineering Pedagogy and Humanities
- UVSM - Institute of Production Systems and Applied Mechanics
- UPMK - Institute of Industrial Engineering, Management and Quality
- UVTE - Institute of Production Technologies

### STUDY CONDITIONS

Regarding the premises and administration, the study conditions in the Faculty are favourable.

We managed to improve access to textbooks by implementing the model of electronic textbooks available for all the Faculty students free of charge. Trying to meet the students' requirements, we introduced Saturday office hours in the Registrar's Office and the academic library. Regarding social policy, the study at the detached workplaces in Komárno, Dubnica nad Váhom and Nitra (the first year of bachelor and master studies) is quite significant.

Besides study, the students can be involved in institutional research activity either by participating in research projects and the Student Research Conference, or working as a research student-helper. The Student Research Conference provides the students of degrees 1 and 2 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 in the International Doctoral Seminar, an annual event organized by the Faculty and attended also by PhD students of foreign universities and research institutes.

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

### QUALITY OF EDUCATION

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

**Tab. No. 3:** Number of Faculty graduates in the academic years 2006/07 - 2009/10

	Bc.	MSc.	PhD.	Total
2006/2007	695	412	20	1127
2007/2008	687	547	32	1266
2008/2009	636	1343	33	2012
2009/2010	817	834	87	1738

The aim of the educational process is the training of graduates for their future profession. Its efficiency is measured by various methods, the most important of which is the method of feedback mapping of the students'

opinions regarding the study contents, activities of the educational process implementation, study environment and teaching strategies. Besides this tool of educational quality improvement, the Faculty carries out a survey regarding the students' satisfaction with the aim to identify weaknesses in the education process, teaching strategies, as well as administration and organisation.

The students of FMST SUT have a chance (in accordance with the law on Universities No. 131/2002 statute) to participate in a survey via a questionnaire which was on the webpage of the faculty. The students of all study degrees could participate.

Together 324 students of all degrees, methods and study forms participated in the electronic student questionnaire of FMST SUT, what is 6,9% from all students.

These areas were in the questionnaire: process and organisation of the study, quality and professional behaviour of teachers, quality of teaching process, accommodation and others.

### SOCIAL MATTERS

Accommodation and board are provided for students in the Student Hostel of M. Uher and the adjacent cafeteria and snack bars. Students mainly appreciate the quite high standard of comfort including free Internet connection, as well as availability of sports facilities such as the fitness centre, gym, indoor swimming pool, tennis courts, and softball and baseball fields 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 the time schedule, length of a training unit, arrangements of subjects, administrating the student agenda via AIS, PC connection, medical care and the possibility of arranging one's matters in the Registrar's and Academic library on Saturdays, etc.

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 internal University and Faculty legislation.



Open Day of the FMST SUT

## GRADUATE PROFILE

### BACHELOR PROGRAMMES (Bc.)

#### Applied Informatics and Automation in Industry

The graduate will obtain the first level university education in the interdisciplinary field of study in Automation and Applied Informatics. The interdisciplinary study allows application of skills in industry and also in the service sphere.

The graduate will understand the information systems of an industrial enterprise and control systems of technological and production processes. He will know the processes and the methods of implementation and operating of information technologies and automation.

The graduate of this major will have basic knowledge of automation and informatics and will be able to implement it in computer-aided systems. He will have knowledge and skills in the field of machine technology, automation and ICT implementation in processes as well as fundamentals of diagnosing, collecting, processing and transferring data, along with experience in programming, computer modeling and simulation. Operation of automatic measuring, control and information systems contribute to the graduate's ability to solve problems regarding the implementation and utilisation of computational and automation technology. He will gain knowledge of natural science within the first degree of university study, mathematical and physical basics of automation and computer science.

The graduation will be able to implement and operate IT systems. He can work alone or also as a member of a team. He has good skills to analyse automation and information technology requirements as well as implement and operate automation equipment and information technologies in control systems.

He will be aware of social, moral, legal and economic contexts of his profession and the consequences of automation and information technologies application.

He 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 successfully operate 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.

#### Occupational Health and Safety

The graduate has received knowledge and skills of technical and technological sciences with specialization for the safety assurance in the field of production technologies, working environment and safe handling of dangerous substances and objects. The graduate is qualified for problem analysis in the field of Occupational Safety and Health, is able to design, implement and manage Occupational Safety and Health management system, and is able to apply knowledge to other systems. The graduate is able to analyze risks and to design suitable precautionary measures for acceptable Occupational Safety and Health

level. The graduate may work in industry and services, in the field of work inspection or relevant professions within regional municipality and state bureaucracy, and in Occupational Safety and Health document processing in particular organisations. The graduate would be helpful in creation of the process of a safe and health-friendly working and living environment in the productive and also in non-productive sphere.



Study promotion at fair Academy VAPAC 2010

#### 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. He gains 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. He achieves ISO standards skills mainly in quality management. He is able to collaborate in operating quality management systems and process related documentation and other regulation documents. He will be employed as a manager responsible for quality assurance in individual structures of an industrial plant, or an expert in quality management.

#### Materials Engineering

The graduate

- will gain complete bachelor's degree education in the field of Materials focused on main kinds of technical materials,
- will understand production, testing, technological processing, selection, exploitation and degradation of properties of main kinds of technical materials,
- will have knowledge of 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,

- 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,
- will be conscious of social, moral, legal and economic impact of his profession,
- will be prepared either for the master's degree study in the field of Materials and related study fields and after graduating also in doctoral degree study, or for entering the job market immediately,
- will successfully operate in industrial companies in the field of technical materials, their technological processing to semi-products and products, as well as in the field of control of their quality, purchasing and selling materials, service and maintenance.

#### Personnel Policy in Industrial Plant

The graduate understands the strategy of personnel management and its connection with theory and practice of market mechanics. The knowledge and skills gained, including computer literacy, will allow him/her to manage human resources successfully. S/he will be able to solve complex personnel problems regarding the requirements of entrepreneurial subjects and their economical, legal and moral limits. The graduate will successfully perform as a personnel or finance manager on various levels of management in larger, medium-sized and smaller companies, in agencies and in both governmental/non-governmental and profit/non-profit organisations. S/he is well prepared to become a highly competent member of management in lower organisational structures, including the field of financial management.

#### Computer-Aided Production Technologies

The graduate is able to perform the job of a production technologist able to operate computational technology CAx systems and Cax technologies used in the production preparation and control. The graduate is able to prepare technical documentation and construct and design programs for CNC production machine tools, model complex 3D products and simulate preparation of their production. The graduate is also able to implement and operate production and technological systems in a position of a CAD/CAM technologist, constructor of production tools and a programmer of NC technology using appropriate computer systems and software.

#### Industrial Management

The graduate understands social and technical systems integrating human resources, information, materials, devices and processes within the complex life cycle of products and services. He has fundamental knowledge of natural sciences, technical, technological and humane disciplines, as well as knowledge of informatics and specific knowledge of industrial engineering oriented on plant management, economy, production management, marketing, accounting etc., with emphasis on practical application of the aforementioned knowledge. He is able to apply gained knowl-



edge and skills in practice, mainly as a team-leader or team-member in the middle management. He will also be able to set and run small businesses or companies.

### Teaching Practical Subjects in Engineering Majors

The graduate is familiar with the organisational characteristics of educational system and institutional rules of school as well as the basic structure of technology and material science, principles of design, implementation and evaluation of teaching process in vocational schools. S/he is able to teach practical professional and vocational subjects aimed mostly at developing the skills in technical subjects at secondary technical and vocational schools, or work as a manager providing practical training in professional education, or a trainer in the field of extra-curricular activities. The graduate is prepared either to continue his/her study in the master degree within the programme "Teacher Training of Technical Vocational Subjects", or to enter the job market.

### Production Technologies

The graduate understands theoretical and practical issues in production technologies and systems. He is able to solve creatively the tasks in the field of production, seek new progressive technology procedures in the production of parts and technology units, using modern technology devices and information systems. He is prepared either to continue his study within Master degree study programme, or to enter the job market as a technologist or a team member in various areas of industry in both private and public sectors.

### Production Devices and Systems

The graduate will gain complete bachelor degree education in the field of manufacturing engineering focused on engineering production including the maintenance and means of mechanisation and automation. The graduate understands machine technologies and applied tools. He has knowledge in fundamentals of management, environmental engineering, work safety and health protection. He is able to solve the problems in the field of technical materials and their properties, as well as machine mechanics. He is prepared either for the Master degree study programme in production devices and systems or for immediate entry to the job market. The graduate will find engagement 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.



Education at FMST SUT

## MASTER PROGRAMMES (MSc./ ENG.)

### Applied Informatics and Automation in Industry

The graduate will obtain 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 organizations, 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 him to design systems and ways of their automated control and information support. His designs will regard environmental and ecological aspects. The graduate will also know the systems of data collection, data processes and data transmissions from the process level to the business level.

He will have deep knowledge of the theory of systems, process automation, automation equipment, algorithms, information technology, programming, data processing and data transmission, information systems, real-time systems, visualisation systems of processes, systems for decision support in business activities, systems integration, etc.

The graduate will be able to analyze, 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, organization or institution. He will be aware of social, moral, legal and economic contexts of his profession in accordance with professional, ethical and legal frameworks applicable to the area of applied information technologies and automation.

The graduate will be ready for an immediate entry into the labour market as well as for the third study degree. He will be prepared to develop his scientific potential in information technologies and automation.

The graduate will successfully perform not only in design and operation of information and control systems in industrial plants, but also in design or consultancy offices for institutions, information, management and telecommunications systems, software engineering, as well as in schools in educational institutions.

### 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. He will master the subject matter of international standards for quality management and intellectual property. He has 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. He 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.

### Integrated Safety

The graduate is able independently analyze problems and figure out possibilities in different fields of industry. He/she is qualified to implement and manage Occupational Safety and Health management systems. He/she has skills to design and realize the conditions for application of integrated management systems in the companies and to integrate this system into other ones. The graduate is able to manage risk on the basis of extended study of sciences, to apply knowledge in the process of risk assessment and analysis via the information technologies. The graduate may work within Occupational Safety and Health management systems, in the field of risk assessment and analyses. He/she is able to design systemic measures, to create the conditions for implementation of domestic and foreign legislation into the Occupational Safety and Health management systems and is able to prepare the documentation for prevention activities within the Occupational Safety and Health management systems.



Graduation Ceremony

### Materials Engineering

The graduate

- will gain complete master's degree education in the field of Materials focused on technical materials,
- will understand development and production of technical materials, their technological processing to semi-products and products, as well as control of their quality and operating diagnostics, connections within chemical composition, structure and technically important properties of materials,
- will have knowledge of production, processing, quality control, application and recycling of materials, methods, techniques and means of property analysis, selection and implementation of materials,
- will be able to specify and propose extensive material solutions in different technical fields, apply a wide spectrum of experimental methods of structure study and properties of materials in solving tasks in engineering practice, analyse and understand technological and other processes in terms of their impact on structure and properties of materials, gauge the influence of production and processing technologies on the working environment and in the case of a need to recommend alternative solutions,
- will be conscious of social, moral, legal and economic impacts of his profession,
- will be prepared either to continue his study in post-graduate degree, gain scientific perspective in a whole scale of fields of materials engineering, or to enter the job market immediately,

- will successfully perform as a team leader or 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.



*Students ball*

### **Machining and Assembly**

The graduate has gained complete bachelor degree education in production of machinery products and implementation of the latest technologies in the field of chip and chipless machining and products assembly in particular. He understands the subject, from the material origin up to the change of its properties after machining up to the phase of its assembly into larger units. He has deep theoretical knowledge in the field of production technologies (machining, welding, forming, foundry and assembly), materials and tools, the application of production machines and equipment supported by the knowledge of CAx technologies. He can perform as a production technologist, tool technologist, CNC technologist and assembly technologist, as well as a leader in the sectors of technological preparation of production.

### **Computer-Aided Design and Production**

The graduates master the complex field of CA systems and CA technologies used in production preparation and control. He is able to meet special requirements and design specialised applications, form and lead the teams implementing engineering computer analyses, simulations of production processes, design computer-aided production units, lead the teams using computer technology in the field of technical preparation of production, or work as managers and entrepreneurs in the field of computational technology and CA system implementation in production support.

### **Industrial Management**

The graduate gains complete university education focused on planning, designing, implementing and managing production systems and also creativity development in engineering projects or processes. He has deep knowledge of natural sciences, technical, technological disciplines and humanities with expertise in industrial management, company management, production management, plant economy, theoretical knowledge of operation and system analysis, logistics, personnel, investment, finance, innovation, information management, etc. The graduate is ready either to continue his study in a postgraduate degree and develop his research career in industrial management, or to enter the job market immediately. He will successfully perform as a middle or top manager in organisations

within various sectors of industry requiring the synergy of managerial, economical, technical and soft skills and knowledge.

### **Industrial and Art Foundry**

The graduate has gained complex knowledge of technological processes of liquid metal preparation, production of moulds for industrial and art castings with high-precision and high-quality surface. He has theoretical knowledge of metallurgy of casting materials, processes, design of castings' mould, moulds manufacturing, and apertures of castings. He is 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. He can autonomously design technological procedures and control production in a foundry. He can successfully perform in public and private sectors, research, as well as in construction and project workplaces.

### **Processing and application of non-metals**

The graduate gains university education in the study field of Materials with specialisation in non-metallic materials. He understands the production, technical treatment, testing, exploitation and degradation of non-metallic materials such as plastic, ceramics, glass, rubber and some special kinds of materials, the correlations between structure and properties of the mentioned materials, as well as control of their quality and processes of diagnosis. The graduate has knowledge from production, treatment, quality control, application, recycling and secondary treatment of the mentioned materials, methods, technologies and appliances of properties analysis, selection and application of non-metallic materials. The graduates can work as a manager or team member (research, development, production or application of non-metallic materials), independently as a project manager, a manager of own company or a manager in industrial production with this specialisation.

### **Forming**

The graduate has gained complete university education in the major of Production Technologies, primarily in Technology of Forming and its implementation in practice. He understands fundamentals of production technologies, processes of metallic material deformation, functions of forming machines and tools, as well as application of mechanisation and automation.

He is able to design technological procedures and forming tools, solve work safety, provide calculations of force and energetic strain parameters and control calculations for the construction of individual parts of tools, implement the knowledge of properties of forming machines and solve automation in forming.

He can successfully perform as a production manager in the fields of technology development and manufacturing practice in various sectors of industry, mainly of automotive industry, as well as in the private sector.

### **Teaching Specific Engineering Subjects**

The graduate is well familiar with job profiles and activities in the related field, is able to

participate in the development of teaching methodology manuals and is aware of social, moral, legal, economic and environmental aspects of his/her profession. S/he is prepared to design the stages of life-long education of adults and to implement them in practice, to adapt educational programmes for a particular type of educational institution and particular groups of students, and to communicate pedagogical and professional knowledge effectively to a wider professional and lay communities. The graduate is ready to perform as a teacher of vocational subjects, a teacher-trainer in the field, or an instructor in the governmental administration and the institutions of further education and education of adults.

### **Production Devices and Systems**

The graduate will gain a complete university (Master degree) education in the field of manufacturing engineering and materials, production processes and production systems. He understands the function of machines and constructions of production equipment. He has knowledge in the field of production machines and materials used in the processes of manufacturing. He is able to solve the tasks of machine mechanics, mechanisation and automation. He can recognize social, moral, legal and economic impacts of his profession. He is prepared to either continue his study in a post-graduate degree programme, 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.



*Student Scientific Activity*

### **Welding**

The graduate is able to evaluate the selection of materials, technology feasibility and modern progressive concepts of products that will be manufactured by welding, other joining technologies and cutting. S/he has simultaneously gained the knowledge of the computational technology utilisation and computer simulations in the field of thermal processes in order to minimise degradations of the chosen materials. S/he is able to justify safety risks and provide solid outcome for the economic assessment of a product. The graduate can successfully perform in the top industrial production, university research, both domestic and abroad, as well as in the managerial positions requiring the knowledge in the field of materials and their further progressive technological processing.



## POSTGRADUATE PROGRAMMES (PhD.)

### Process Automation and Informatization

- The graduate will have expertise in 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, he can specialize 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 graduate will master mathematical principles, theory and cybernetics methodology combined with advanced methods, theories of management and automation. He will know the principles and methods for designing the complex systems and complex systems of information technologies.
- The graduate will be able to analyze 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.
- He will be aware of the social, moral, legal and economic aspects of his profession as a scientist or a researcher.
- The graduate will be ready 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, etc. He will also be ready to articulate the problem and lead the research team professionally.
- He can successfully perform as a top development researcher in the top scientific, research and academic institutions in both domestic and foreign labour markets.



*International doctoral seminar*

### Didactics of Technical Professional Subjects

The graduate is able to identify, analyse and solve the demanding issues of an empirical and conceptual character, as well as to plan, organise and evaluate the research in the related field. The graduate can either lecture didactics of professional subjects at

teacher-training faculties preparing the teachers for secondary technical schools, or work for research and development and methodology centres requiring ISCED 7 (level in international classification of education), as well as for governmental administration and educational institutions as an expert in the fields of methodology, research and development and programme concepts.

### Integrated Safety

The graduate is familiar with methods of research and experiments within the Occupational Safety and Health management systems. The graduate is qualified to conduct independently scientific research as well as work in the inventive teams, he /she yields the own solutions of complicated problems in the field of Occupational Safety and Health theory and practice, risk management, safety of working and living environment and fire safety, as well as other related branches. The graduate is able to scientifically formulate and elaborate a problem, introduce his/her own results from research work with the possibility of their application in the study branch, including the presentation of results into the scientific journals and proceedings. In the practice he/she may work in the research department of production companies, in the high manager position in the field of risk management and safety assurance, working environment, and at the faculties of technical universities with the specialization in the field of safety.

### Engineering of Production Quality

The graduate achieves the complex PhD education in Production Quality focusing on quality management skills. He knows the scientific methods of research and development to acquire knowledge. He is 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 innovate processes and to improve the quality management. He 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.

### Materials Engineering

The graduate

- will master the rules of scientific work in the field of Materials,
- will be prepared to discover and bring his own new solutions of problems,
- will learn to formulate problems scientifically and present his own results,
- will be able to gauge legal and environmental aspects, ethical and social aspects of scientific work,
- will gain doctoral degree education in the field of Materials,
- is familiar with scientific methods of research and development as well as processes leading to his own solving problems in the field of technical materials,
- will master the rules of individual and team scientific work, scientific formulation of prob-

lems, ethical and social aspects of scientific work, the rules of presentation of research results,

- will understand the relations of research – development – production – implementation – recycling, aspects of research and development of new materials, legal and environmental aspects of new products,
- will be conscious of social, moral, legal and economic impacts of his profession,
- will be prepared to gain scientific perspective in a large scale of material research fields, for a creative development and widening knowledge in the field, or to enter the job market immediately,
- will successfully perform as a researcher in research institutes, at universities or a highly-qualified specialist in big industrial companies focused on production of materials or technological processing of materials to semi-products and products.

### Industrial Management

The graduate gains complex university education in Industrial Management oriented on the knowledge development in the field of managerial activities, tools and methods applied in various types of companies. He has mastered research and development methods of gaining knowledge autonomously. He will be able to develop creative methods in the field of industrial management and design, provide social, technical and managerial systems in various types of companies, accelerate the development of innovative processes, and apply various management improvement approaches. The graduate will be successful in the top managerial positions in various types of organisations, consulting companies and universities, in both research and teaching careers.

### Processing and application of non-metals

The graduate knows 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 is ready to discover and bring new independent solutions of problems, scientifically formulate the problem and present his/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, aspects of research and development of new materials (especially based on glass, plastics and ceramics). He may work as a scientific/research worker in research institutes, at universities or in large industrial enterprises aimed to the production of materials or technological processing of materials into semi-finished products and products.

### Machine Technologies and Materials

The graduate gains wide 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 masters 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. The graduate can find jobs in research and development institutes in managerial positions in the field of sophisticated production technologies, and in engineering universities. He is able to autonomously articulate and solve research tasks, and to lead a research team.



Student award in Latvia

### Production Devices and Systems

The graduate will gain high proficiency in the field of processing control, in the development of new control methods and algorithms at the level of scientific, and be a research worker. He can apply the scientific methods of research and development in the area of manufacturing engineering, focused on the development of machining, forming, welding and casting machines, robotic equipment, machines for woodworking, solid waste, etc. He acquires the principles of scientific work, of the relationships among research – development – production – application – recycling. He understands connections between automation, automated and automatic control of manufacturing processes, preparation and control of experiments, modelling, simulation and prognostics. He can recognize social, moral, legal and economic impacts of his profession. He is prepared to formulate and solve the topical problems of specialization, and to lead a research team. The graduate can find engagement in the research, scientific or educational establishments and also in industry as a R&D worker.

### Students' awards 2010

#### 2.2.2010

The awarded PhD students at the meeting of the Scientific Board of the Faculty of Materials Science and Technology Peter Gogola and Marián Vach were awarded in the research area of Metallurgical and assembly sciences ; Jozef Bárta was awarded in the research area of Machining.

#### 8.4.2010

The first certificate holders of the UNiCert system

The first certificates in the UNiCert III system were awarded to eleven students during the Student Research Conference in the Section of Foreign Languages – English language.

#### 8.4. 2010

The 14.th year of the Student Research Conference as the final phase of students research activity at the faculty. Awarded students:  
**Section: Materials** - Martin Sahul, Alfréd Olláry, Michal Ondruška

**Section: Production technologies – machining and assembly 1** - Karol Gejdoš, Peter Vozár, Martin Podskalka

**Section: Production technologies – machining and assembly 2** – Roman Zelník, Tibor Horváth, Ľudovít Tóth

**Section: Production technologies – welding and forming** – Gábor Lörincz, Andrej Ďuračka, Ivan Michalec

**Section: Industrial engineering, management and quality 1** - Martin Beluský, Katarína Drieniková, Katarína Bachratá

**Section: Industrial engineering, management and quality 2** – Tomáš Naňo, Matej Pecháček, Miriama Špaleková, Tomáš Kollár

**Section: Occupational safety and health protection** – Hana Vengrínová, Michal Belčík

**Section: Environmental engineering** - Katarína Fabianová, Zuzana Dragulová, Tatiana Černeková

**Section: Applied informatics and automation in industry** – Nadežda Kocáková, Dominika Jurovatá, Marek Heteš

**Section: Engineering pedagogy** - Lukáš Miklošovič, Veronika Horňáková, Lenka Bokorová

**Section: Foreign languages – English language** - Alim Imanbakiev, Tomáš Schottert, Michaela Tokárová, Ľubomír Šmida

#### 15.4.2010

Alim Imanbakiev and Tomáš Schottert won the 2. place at the Slovak Student Research Conference which was organised by the Faculty of Natural Sciences of the University of St. Cyril and Methodius in Trnava, in the major Applied natural sciences.

#### 18.5.2010

**Success of the students at the Student research conference at the University of St. Cyril and Methodius in Trnava**

#### 15.-17.6.2010

**Awarded final thesis of the students of FMST SUT**

The TOP prize in the category student thesis was awarded to Tatiana Štibrányiová, MSc. and Lukáš Kubica, MSc.

#### 28.6.2010

**The award of dean for excellent results in the engineering degree in academic year 2009/2010** was given to the students of FMST SUT Katarína Drieniková, Bc. , Martina Merava, Bc. and Ľubica Švantnerova, Bc..

#### 23.7.2010

The award of dean for excellent results in bachelor degree in academic year 2009/2010

### Bachelor study – full time study

Number	Name with titles
1	Baťková Marianna, Bc.
2	Cívik Daniel, Bc.
3	Dvorská Monika, Bc.
4	Hegedúšová Natália, Bc.
5	Horvátová Zuzana, Bc.
6	Jurík Juraj, Bc.
7	Knizner Miroslav, Bc.
8	Kolarovič Ján, Bc.
9	Kovařík Vlastimil, Bc.
10	Longauer Ján, Bc.
11	Rakús Lukáš, Bc.
12	Sroka Michal, Bc.
13	Svíteková Lucia, Bc.
14	Škulibová Jana, Bc.
15	Šmida Ľubomír, Bc.

### Bachelor study – full time study, combined form

Andel Ľuboš, Bc.

### Bachelor study – part time study

1	Báto Róbert, Bc.
2	Bíró Róbert, Bc.

#### 23.7.2010

**Honourable mention for the final thesis in bachelor degree in the academic year 2009/2010**

### BACHELOR STUDY – full time study

- 1 Ambrusová Alena, Bc.  
Definition of phases in selected complex metal alloy on base of Al-Pd-Co
- 2 Bartovičová Lucia, Bc.  
Analysis of contemporary state of measurement and monitoring of processes in the company Streit Trnava, s.r.o.
- 3 Bittnerová Monika, Bc.  
Proposal of ergonomics rationalization measurements in selected operations of the company ISOVER s.r.o. Trnava
- 4 Cuninka Tomáš, Bc.  
Analysis of possibilities and design of

measurements for implementation of strategy system of corporate social responsibility in the company SWEDWOOD SLOVAKIA, s.r.o., o.z. Majcichov

- 5 Černeková Tatiana, Bc.  
Determination possibilities of ecotoxicity of selected process liquids
- 6 Ďuriš Rastislav, Bc.  
Design of measurements for improvement of tool application of marketing communication for a concrete product of the company I.D.C. Holding, a.s.
- 7 Gaži Michal, Bc.  
Design of measurements for improvement of production logistics management in the company Leoni Autokabel Slovakia spol. s r. o., Trenčín
- 8 Kovařík Vlastimil, Bc.  
Design and production of one-grade gear box
- 9 Malovcová Lucia, Bc.  
Manager personality in company
- 10 Pekar Richard, Bc.  
Universal file manager for Web range
- 11 Rolník Ladislav, Bc.  
Design of deformation part of scanner for multi-axis measurement
- 12 Sroka Michal, Bc.  
Artificial intelligence in games
- 13 Škrhová Hana, Bc.  
Environmental, safety and food labelling as an informative tool for consumers
- 14 Šmida Ľubomír, Bc.  
Design of measurements for effective managing of relations with customers in the company Pipeco Slovakia s.r.o., Brezno
- 15 Zadubanová Lenka, Bc.  
Improvement of motivation system of employees in ETI ELB, s.r.o. Báhoň

#### Bachelor study – full time study, combined form

- 1 Babulík Andrej, Bc.  
Design and production of draw-out lift equipment
- 2 Bubánová Aneta, Bc.  
Design preparation for implementation of statistic methods in area of temporary quality production managing of LCD TV
- 3 Dorušincová Adriana, Bc.  
Anti-drugs and preventive education
- 4 Havel Matej, Bc.  
Project of application of claim management in the company LAMDA-MODRA, s.r.o.

- 5 Kubica Marián, Bc.  
System for support of work tasks management in IT company
- 6 Kulich Miroslav, Bc.  
Technical tools for increasing of objects safety (camera system on base of IP cameras)
- 7 Salay Vladimír, Bc.  
Safety transports via railways of the Slovak republic
- 8 Srb Martin, Bc.  
Design of measurements for improvement of management of production and logistics processes for machines Raster in the company INA SKALICA s.r.o.
- 9 Šafranek Michal, Bc.  
Idea design čel'ustí úchopnej hlavice pre tvarovo zložité súčiastky
- 10 Šarvaic Peter, Bc.  
Objecting of lighting in production company Samsung Voderady
- 11 Šoka Martin, Bc.  
Dry wire drawing

#### Bachelor study – part time study

- 1 Fišerová Monika, Bc.  
Production of gear wheels in the company ZF SACHS Slovakia, a.s.
- 2 Harárová Anna, Bc.  
Design and production of simplified model of bicycle
- 3 Ježovičová Jana, Bc. Ing.  
Influence of cobalt component on microstructure of compacts from tool steel
- 4 Lukáč Miloš, Bc.  
Design for implementation of new concepts of maintenance management in the company ECCO Slovakia, a. s.
- 5 Porubský Peter, Bc.  
Study of profile modification of workpiece after centreless grinding
- 6 Schanz Tomáš, Bc.  
Influence of separation emulsions on welding spraying
- 7 Sojčiaková Miroslava, Bc.  
Design of system of supplier selection
- 8 Šperka Ľubomír, Bc.  
Optimization of wide metropolitan computer net (active part)
- 9 Turičík Miloš, Bc.  
Design and implementation of management of production equipment for forming of plastic folias

#### 28.9.2010

The committee of the Section for research literature and computer programmes of Literary fund gave after proposal of the faculty dean bonus for **the best works of the Student research conference in the academic year 2009/2010** to the students of FMST SUT - Hana Vengrínová, Bc. and Katarína Fabiánová, Bc.

#### 10. 12. 2010

The 2. year of Inter-Universities student research and art conference (ŠVOaUK) at UCM in Trnava. The following students of supervisors prof. Sakál and Ing. Hrdinová were successful:

**Tomáš Cuninka, Bc.** in the section Marketing communication I. (3. place)

**Janka Janičková, Bc.** in the section Marketing communication II. (special award)

#### 17.11.2010

In occasion of the 17. November the rector SUT Vladimír Bálež, Professor, DrSc. awarded the best students of FMST SUT:

Ďuriška Libor

The best student of Bc. study

Pobiecky Jakub, Bc.

The best student of MSc. study

Zvončan Marek, MSc.

The best student of PhD. study

Beťko Ján, Bc.

Work in Student parliament

Svinčák Juraj, Bc.

Representation in athletics

#### 2. 12. 2010

the PhD student of the study programme Didactics of technical professional subjects **Jozef Kadnár, MSc.**, supervisor: Roman Hrmó, Assoc. Prof. PhD was awarded for the most innovative thesis with title The Implementation of ICT in Engineering Pedagogy in the capital of Latvia during the 6.th International conference of young scientists.

#### 2.12.2010

The Slovak society for quality declared the results of the 6. year of competition Award for the best student work in area of quality management 2010", which was awarded to **Ing. Jana URDŽÍKOVÁ** in the category of dissertation thesis with topic: A proposal of methodology to improve a claim management level in the Slovak organizations.

#### On 20. 1. 2011

during the New-year meeting of employees and friends of the faculty the dean Oliver Moravčík, Professor, PhD. awarded these dissertation thesis in research 2010:

#### Major

Machining technology and materials

#### Student

**Jozef Bárta, PhD.**- Welding of special modified thin steel sheets

#### Major

Industrial management

**Student**

**Juraj Drahňovský, PhD.** - A proposal of TPM implementation and application with focus on the production sustainability in industrial plants in SR

**Major**

Engineering of production quality

**Student**

**Jana Urdziková, PhD.** - A proposal of methodology for improvement of claim management level in organisation in Slovakia

**Major**

Automation and operation

**Student**

**Michal Kebísek, PhD.**- Application of data reaching in production processes operation

**Major**

Applied Mechanics

**Student**

**Rastislav Ďuriš, PhD.**- Solving of non-linear tasks with complete matrices of solidity.

### **Sport success of the students of FMST SUT**

#### **World championship - Powerlifting**

**(Trnava 21. - 25.9. 2010)**

Matúš Sobota, Bc.: 1.place

#### **ACADEMIC world championship - Shooting**

**(Poland 15. - 16.9. 2010)**

Monika Zemková: 7.Place

#### **World championship - Long-Distance**

##### **Swimming**

**(Canada 15. - 23.7. 2010)**

Tomáš Vachan: 29.place

#### **ACADEMIC slovak championship - Athletics**

**(Banská Bystrica 23.5. 2010)**

Tomáš Benko, Bc.: 2.place - 100m; 3.place - 200m

Richard Horváth: 3.place – long-jump

Juraj Svinčák, Bc.: 3.place - 400m

Marek Šajbidor, Bc.: 4.place - 100m a 200m





# RESEARCH





## RESEARCH

The research orientation of the Faculty of Materials Science and Technology corresponds with its pedagogic profile and the long-term SUT orientation. As amended by section 30, paragraph 1, subparagraph c of Act 131/2002 of the Coll. on Universities and as amended by other acts, the Faculty Scientific Board evaluates the Faculty's activity in the field of science and technology once a year.



Faculty presentation at the INDUSTRY EXPO exhibition

### Orientation of the research

The scientific and research activity of FMST SUT research and pedagogical staff is carried out in the following forms:

- research and pedagogical projects within Slovak grant agencies
- projects solved within international programmes
- projects of international collaboration
- projects of applied research and development
- projects of contractual research and development

The research content is oriented to the following fields:

- materials research with a focus on the research, development and technological processing of the basic and new kinds of technical materials,
- research, development and optimization of new technologies of industrial production oriented particularly on the technological processing of modern technical materials and ecologically clean processes and products, numerical simulation of technological processes
- process identification, automation and control, as well as information support for technological, production and organization systems,
- research and verification of managerial control principles and their organization 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,
- humanities and social sciences with emphasis on the improvement and innovation of the teaching methods and forms in the training of technical intelligentsia.

The Faculty of Materials Science and Technology with the seat in Trnava, Slovak University of Technology in Bratislava was evaluated in five areas of research in the complex accreditation of activities. Five areas related to the faculty study programmes:

Research area	Evaluation
Machining	A
Metallurgical and assembly sciences	A
Information sciences, automation and telecommunication	B
Engineering and technology	B+
Pedagogical sciences	B -

### Research activities

In year 2010 the research projects VEGA, KEGA, APW and others were worked out and solved at the faculty. The number of projects in year 2010 from particular agencies and grant schemes are as follows:

	Number
Projects VEGA (Research grant agency)	35
Projects KEGA (Cultural and education agency)	12
APVV (Agency for support of research and development)	9
6. framework programme	1
7. framework programme	2
Projects MŠVVaŠ SR	2
Other foreign projects	4

### Foreign relations

FMST SUT forms cooperation on the base of good partnership relations which are typical with mutual cooperation, profit in the area of research activities or experience change or education.

Active cooperation of our organisation reflected in closed agreements with foreign partners is proof of the necessity of searching for new partnerships and cooperations according to this base.

Institutes which signed the contracts on cooperation with the faculty:



Welcome of the foreign guests

### Foreign institute Town (state)

Brandenburg university of technology  
Cottbus (Germany)

Leibniz Institute for Study of Solids and Material  
Dresden (Germany)

Fachhochschule Anhalt, Wirtschaft und Gestaltung  
Koethen (Germany)

Faculty of Machining, University of Ljubljana  
Ljubljana (Slovenia)

Moscow Institute of Energy  
Moscow (Russia)

Institute of photonics and electronics AV ČR  
Prague (Czech Republic)

Buehler GmbH  
Düsseldorf (Germany)

Ukrainian Academy of Engineering and Pedagogy  
Charkov (Ukraine)

Faculty of applied informatics and robototechnology UGATU UFA  
Ufa (Russia)

Faculty of economy, management and finances UGATU UFA  
Ufa (Russia)

Baotou Research Institute of Rare Earths (BRIRE)  
Baotou (China)

National Institute of R and D for Materials Physics  
Bucharest (Romania)

Faculty of Physics University of Bucharest  
Bucharest (Romania)

Pohang University of Science and Technology  
Pohang (South Korea)

Faculty of Organization and Informatics University of Zagreb  
Zagreb (Croatia)

Bekaert  
Zwevegem (Belgium)

Faculty of Machine Building Technical University of Cluj-Napoca  
Cluj-Napoca (Romania)

Instytut technologii eksploatacji  
Radoma (Poland)

Innovation Center of Materials Diagnostics and Application at ČVUT  
Prague (Czech Republic)

University of Miskolc  
Miskolc (Hungary)

Forschungszentrum Dresden - Rossendorf  
Dresden (Germany)

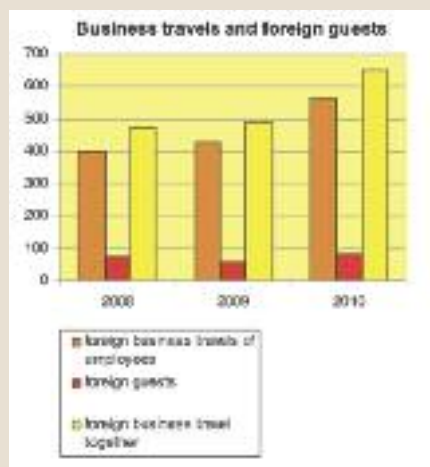
Institute for Systematic Coaching and Organisation Advisory  
Berlin (Germany)

**Exchanges**

The students of FMST SUT participate in exchange programs of short-term and also long-term scholarships. In 2010 the faculty had 28 agreements in the programme Erasmus. The dominant Erasmus partners are institutes in the Czech republic (5 agreements), Poland (6 agreements), Germany (4 agreements), and Hungary (3 agreements).

**Business travels and foreign guests**

Development of positive relations with international partners is reflected in the number of foreign guests and business travels of our employees to foreign institutes. The following diagram shows a positive trend in this area:



**Foreign visitors to the faculty**

Sobrino Daynier Rolando Delg	Cuba
Bielak Róbert	Austria
Schumi Thomas	Austria
Liedl Gerhard	Austria
Matysiak Waldemar	Poland
Melezinek Adolf	Austria
Vrba Igor	Serbia
Strbac Branko	Serbia
Baczkowski Andrzej	Poland
Berce Petru	Romania
Gyenge Csaba	Romania
Aleksandrov Aleksandar	Bulgaria
Hajkowski Jakub	Poland
Nyers Jozsef	Serbia
Nemedi Imre	Serbia
Santa Robert	Serbia
Sovilj Bogdan	Serbia
Ungureanu Nicolae	Romania
Cotetiu Radu	Romania
Ros Olimpia	Romania
Alic Carmen	Romania
Ratiu Sorin Aurel	Romania
Alexa Vasile	Romania

Kiss Imre	Romania
Ros Victor	Romania
Dobovicek Sandro	Croatia
Wetzig Klaus	Germany
Boesman Peter	Belgium
Belina Károly	Hungary
Tóth Ákos	Hungary
Georgieva Julian	Bulgaria
Sýkorová Libuše	Czech republic
Danyi József	Hungary
Hegedüs Zoltán	Hungary
Kocsis Andrasz	Hungary
Aišman David	Czech republic
Pinter István	Hungary
Bikic Sinisa	Serbia
Bukurov Masa	Serbia
Hodolic Janko	Serbia
Piotrowski Andrzej	Poland
Boral Piotr	Poland
Kukielka Leon	Poland
Kiedrowicz Marek	Poland
Oancea Gheorghe	Romania
Kroupa Aleš	Czech republic
Hřibňák David	Czech republic
Petrkovska Lenka	Czech republic
Machado Norge Isaiías Coello	Cuba
Rodríguez Angel Silvio Machado	Cuba
Glistau Elke	Germany
Illés Béla	Hungary
Telek Peter	Hungary
Osterwalder Konrad	Japan
Poljakova Tatjana	St. Helen
Smith Karl	USA
Quadrado Carlos Jose	Portugal and Azures
Dowd Peter	Australia
Stern Elsbeth	Switzerland
Atman Cynthia J.	USA
Taylor Kevin	UK
Karapetrovič Stanislav	Canada
Wächter Bernd	Belgium
Bielak Róbert	Austria
Pospichal Robert	Austria
Schumi Thomas	Austria
Kostka Peter	Czech republic
Iovu Mihail	Moldavia
Procházková Ol'ga	Czech republic
Zavadil Jiří	Czech republic
Pedlíková Jitka	Czech republic
Jirková Hana	Czech republic
Malina Jiří	Czech republic
Aišman David	Czech republic
Kučerová Ludmila	Czech republic
Lukovics Imrich	Czech republic
Bilek Ondrej	Czech republic

Liedl Gerhard	Austria
Schumi Thomas	Austria
Bielak Róbert,PhD.	Austria
Samardžić Ivan	Croatia
Stoić Antun	Croatia
Kozak Dražan	Croatia
Ivandić Zeljko	Croatia
Varga Gyula	Hungary



Opening of the Technological Museum

**Membership in international organisations**

The faculty cooperated on the international level in significant scientific and technical organisations in the last year. The FMST SUT is an institutional member in five international specific institutions. Specific members of the faculty (55 individual memberships) are active in different international or world organisations in different positions, from members to chairs, vice-chairs and members of councils.

**Membership in international professional organisations**

- Association for thermal processing of metals
- International Society for Engineering Pedagogy - IGIP
- European Platform of Women Scientists
- European Network Education and Training in Occupational Safety and Health (ENETOSH)
- Europalliance for innovations



Joint International IGIP- SEFI Annual Conference 2010

**Memberships in the Slovak professional organisations**

- Slovak Natural Gas and Crude Oil Union
- Association of Industrial Ecology in Slovakia
- Slovak Chamber of Commerce and Industry

Slovak Society for Quality  
 Slovak Society of Ergonomics  
 Slovak Society of Maintenance  
 Automobile Cluster

### Approved rights to provide the habilitation process

**FMST SUT has the right to habilitate (approve the title "associate professor") and inaugurate (approve the title "professor") in the study majors:**

- 5.2.7. Machining Technology and Materials
- 5.2.14. Automation
- 5.2.26. Materials
- 5.2.50. Production technology
- 5.2.52. Industrial Engineering
- 8.3.5. Occupational Health and Safety
- 5.2.57. Quality of Production

### New Professors and Associate Professors in year 2010

#### Professor of Emeritus

On the 15.2.2010 the rector of SUT Magnificencia Prof. Ing. Vladimír Bálež, DrSc. awarded the title of professor of emeritus to Alexander Janáč, Professor, PhD.



*Alexander Janáč, Professor, PhD.*

#### Visiting professor

On the 21.4.2010 visiting professor Daniel Švrček, PhD. was awarded by the decree.

On the 21.4.2010 visiting professor Peter Fodrek, PhD was awarded by the decree.

On the 09.11.2010 visiting profesor Dr. Andreas Kolitsch from Forschungszentrum Dresden-Rossendorf (Research Center) was awarded by the decree.



*Daniel Švrček, PhD.*



*Peter Fodrek, PhD.*



*Dr. Andreas Kolitsch*

#### Associate Professor

The rector of the University of Žilina named new associate professor after accomplishment of the habilitation process Milan Nad', PhD.



*Milan Nad', PhD.*





# INTERNAL RELATIONS





## INTERNAL RELATIONS

### Social Programmes for Staff of the Faculty of Materials Science and Technology

The FMST SUT creates the following conditions of social policy for employees according to its rights defined in legislation:

- it forms appropriate working conditions to improve the culture of work and the working environment
- it provides catering for employees and contributes for catering in the amount of 55% of the price
- it provides catering for former employees (retired) according to the defined rules and it organises annual meetings with former employees
- it takes care of further qualifications of employees
- it creates conditions to employ disabled people and it cooperates with protected workshops.
- It provides occupational safety and health protection
- it solves the question of compensation money by finishing of working contract according to the defined rules
- it pays employees to the 13th or 14th income in regards to the state of financial sources
- it pays to employees special revenue by life jubilee of 50 years age in regards to the time of employment at SUT.
- It enables employees to work in flexible working hours
- it provides to mothers and single employees who take care of children to 15 years one day of paid time off each three months.
- It contributes to retirement savings of employees
- it provides in certain cases a contribution from the social fund.

The management of FMST SUT is interested in employee opinions. Every year the survey is made, it can present 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 measurements are created on the basis of the survey of satisfaction.

### Security system

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

- Work injuries: 1
- School injuries: 0
- Number of claims for recourse: 0
- Illnesses caused by work: 0
- Analysis of causes of dangerous situations and dangerous industrial accidents: 0

**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 categories of work from the perspective of health risks.

**Personnel and protection of working appliances:**

- the list of working activities,
- the report on State of technical equipment and control, revision and repair

**Areas of the training of Work Safety and Health Protection employees and creation of rules:**

- admission training – **43 employees**
- periodical training of employees - **259 employees**
- training of management - **20 employees**
- the first instructions for students
- training of employees to provide first aid – **21 employees.**

**Status of areas at fire risk: 0**

**Financial amount** used for repairs and revisions of PHP, hydrants, EPS and fire closures: 21 520 €

**Number of fire prevention** controls in every building of the Faculty of Materials Science and Technology: 24

**Activity in the area of education and creating of rules:**

- Area of fire control education:
- admission training : 43 employees
  - Periodical training: 246 employees
  - Training of employees providing fire protection in extra-work time: 25 employees
  - Specific preparation of fire patrols: 28 employees

### Public Relations

Contents of the faculty activities in the area of PR are:

- professional care of all important relations,
- active presentation, implementation and harmonizing of all important interests,
- creation of a positive image of the faculty.

The task of public relations is:

- to communicate regularly with all important target groups so that their position and their understanding of the faculty is stronger
- to increase prestige, provision of information, positive attitudes and presentation of successful results in all important areas of faculty activity.

### List of the most important events at the faculty in year 2010

#### JANUARY 2010

21.1.2010  
New-year meeting of employees of FMST SUT

25.1.2010  
Television channel BBC visited FMST SUT

28.1.2010  
Campuswide open house at FMST SUT



*New-year meeting of employees of FMST SUT*

#### FEBRUARY 2010

8.-9.2.2010  
The first Slovak competition Skills Slovakia – Young Mechatronic under the auspices of the company Festo spol, s. r. o. and ŠIOV

17.2.2010  
Opening of the Technological museum

27.2.2010  
students' ball 2010

#### MARCH 2010

3.-5.3.2010  
FMST SUT as a participant of trade fair IndustryExpo

11.3.2010  
Presentation of the simulation programme Moldflow at the Institute of Production Technologies

13.-14.3.2010  
the 36th year of the International swimming competition

#### APRIL 2010

7.-9.4.2010  
Annual Joint Working Group Meeting Cost MP0602

8.4.2010  
Student Research Conference 2010

13.4.2010  
14. Seminar ESAB  
15.4.2010  
Presentation of simulation programme CAD-MOULD at the Institute of Production Technologies

19.4.2010  
2nd conference of pedagogues of FMST SUT

19.4.2010  
Meeting with the management of AS FMST SUT

21.4.2010  
Day of FMST SUT

21.4.2010  
Awarding of Golden plaque of SUT in memoriam to František Heger, Professor

22.4.2010  
Festival of experiments at the Institute of Safety and Environmental Engineering

29.4.2010

International conference Environmental and safety aspects of fires and accidents



*Day of FMST SUT*

### MAY 2010

12.5.2010

Oliver Moravčík, Professor, PhD. elected for the dean of FMST SUT

14.5.2010

Lecture of Dr.Dr.h.c. Peter Joehnk, Professor from Forschungszentrum - Dresden

16.-19.5.2010

International Doctoral Seminar 2010

27.5.2010

Specific seminar PRAMET 2010

31.5.-4.6.2010

The lecture "Ion Beam Research in Materials Science" of Klaus Wetzig, Professor from IFW Dresden

### JUNE 2010

1.6.2010

Reconstruction of building Z of FMST SUT

9.6.2010

Building groundbreaking for the Centre of Excellence

18.6.2010

TEACHER 'S CUP 2010

21.6.2010

Implementation of the system TelePresence

25.6.2010

Awarding of appointment letters to faculty management



*Teachers 'Cup 2010*

### JULY 2010

13.7.2010

Ceremonial opening of hall construction of CE

### AUGUST 2010

12.8.2010

Reconstruction in the academic library

29.8.2010

General reconstruction of energy wires and media in Campus of FMST SUT Bottova ulica

### SEPTEMBER 2010

7.9.2010

Students of secondary schools at FMST SUT - LUS 2010

8.9.2010

Technical workshop „High-top technology and their application in practice"

8.-11.9.2010

17. International research conference FORMING

19.-22.9.2010

Joint International IGIP-SEFI Annual Conference 2010

20.9.2010

Inauguration of the dean of FMST SUT

### OCTOBER 2010

5.-7.10.2010

FMST SUT on trade fair Academy VAPAC 2010

6.-7.10.2010

Election to the AS FMST SUT for 2010-2014

20.10.2010

the lecture of Alexander Cimbalák with topic Integration of Information systems

21.10.2010

Meeting of members of Dean's collegium with former employees of FMST

25.10.2010

Ceremonial matriculation of the first year students in the academic year 2010/2011 in Trnava

27.10.2010

Ceremonial matriculation of the first year students in the academic year 2010/2011 in Komárno

28.10.2010

Opening of hall of the Centre of Excellence 5-axis machining

29.10.2010

Partnership of the Faculty of Materials Science and Technology and the European Alliance for innovations



*Joint International IGIP - SEFI Annual Conference 2010*

### NOVEMBER 2010

2.-5.11.2010

GAUDEAMUS 2010 – trade fair of university education

3.11.2010

Ceremonial matriculation in Dubnica nad Váhom

10.11.2010

Lecture of Krzysztof Witkowski, PhD.(Poland) „Logistics System in Economy" and Sebastian Saniuk, PhD. from the University in Zelena Hora, (Poland) „Theory of Constrains in Production Logistic"

11.11.2010

Dies Iovis Occurrus: Andrej Černák, Professor, DrSc. "Ophthalmology – an attractive medicine major"

15.11.2010

New management of FMST SUT

18.-19.11.2010

Seminar „New trends in material diagnostics"

23.11.2010

Breakfast with Bekaert

29.11.2010

Meeting of the faculty meeting with students

30.11.2010

Seminar „70 years of machining at SUT"



*Meeting of members of Dean's collegium with former employees of FMST*

### DECEMBER 2010

3.12.2010

Dies Iovis Occurrus –Peter Staněk, Assoc. Prof. PhD. "Future of global society and global economy"

8.12.2010

Signing of memorandum on cooperation between universities „Charter of Foundation" (University of Miskolc, Otto-von-Guericke-University Magdeburg, Budapest University of Technology and Economics, Technical University of Kosice, University of Security Management in Kosice, Szent István University in Gödöllő, Częstochowa University of Technology, College of Nyíregyháza, Graz University of Technology, Technical University of Cluj-Napoca and the Faculty of Materials Science and technology, Slovak University of Technology), who agreed to support together mutual research, improvement of curricula and knowledge transfer between universities in area of logistics.

## Awards in year 2010

### 21. 1. 2010 awarding of memorial medals of Aurel Stodola

Ján Valko, MSc. Eng  
*JAVYS a.s.*  
 Matej Korec, MSc., PhD.  
*VÚJE a.s.*  
 Slávka Jánošíková, PhD.  
*Transpetrol*  
 Jozef Mihok, Professor, PhD.  
*DMD group Trenčín*  
 Štefan Chudoba, PhD.  
*Automobile cluster TT*  
 Štefan Bošňák, MSc. Eng.  
*Town hall, Trnava*  
 Tibor Mikuš, MSc. Eng.  
*TTSK Trnava*  
 Ľubomír Jahnátek, Professor, PhD.  
*MH Bratislava*  
 Dušan Čaplovič  
*Government of SR*  
 Bystrík Stanko, MSc. Eng.  
*KR PZ SR Trnava*  
 Dr.h.c.Dipl.-Finw.Rolf Pfrengle  
*IFW Dresden*  
 Dr.h.c.prof.Dr. Peter Joehnk  
*Forschungszentrum Dres.*  
 Ľudovít Dobrovský, Professor, PhD.  
*FMMI VŠB Ostrava*  
 Volkmar Richter, Professor, PhD.  
*FH Köthen*  
 Peter Husar, Professor, PhD.  
*FIA TU Ilmenau*  
 Tihomir Hunjak, Professor, PhD.  
*FOI Varaždin*  
 Jozsef Danyi, Professor, PhD.  
*Föiskola Kecskemeth*  
 Bella Illes, Professor, PhD.  
*FMEI Miskolc*  
 Anthony Hall  
*Delcam PLC Birmingham*

### 12.3.2010

Milan Turňa, Professor, PhD. IWE was awarded with the **GOLD MEDAL FOR SLOVAKIA** in 2009. It was awarded by American Biographical Institute, Inc. in the North Carolina, USA.

### 22.-25.4.2010

**The award** „Main machining engineer in area of navigation“ was given to Koloman Vincze, Assoc. Prof. PhD.

### 4.6.2010

Mayor of town Dubnica nad Váhom awarded the Faculty of Materials Science and Technology SUT with the prize "Cenu mesta Dubnica nad Váhom" in occasion of the 50th anniversary of town rights receiving. The award was for development and cooperation in university education in the region.

### 13.6. 2010

Award of memorial medal of Aurel Stodola

### 13.6. 2010

#### Award of memorial medal of Aurel Stodola

Jana Štefánková, MSc. Eng.	FMST SUT
Kvetoslava Rešetová, PhD.	FMST SUT
Rudolf Reháč, PhD.	FMST SUT
Milan Hančín, MSc. Eng.	FMST SUT
Jaroslava Ďurišová, MSc. Eng.	FMST SUT
Peter Halada, MSc. Eng.	FMST SUT
Dušan Knap, MSc. Eng.	FMST SUT
Bartolomej Hajník, Assoc. Prof. PhD.	FMST SUT
Koloman Vincze, Assoc. Prof. PhD.	FMST SUT
Milan Kováčik, MSc. Eng.	FMST SUT
Mária Mišútová, Assoc. Prof. PhD.	FMST SUT
Peter Grgáč, Professor, PhD.	FMST SUT
Jozef Peterka, Professor, PhD.	FMST SUT
Jozef Sablik, Professor, PhD.	FMST SUT
František Horňák, Assoc. Prof. PhD.	FMST SUT
Koloman Ulrich, Professor, PhD.	FMST SUT
Jozef Janovec, Professor, DrSc.	FMST SUT
Karol Velišek, Professor, PhD.	FMST SUT
Karol Balog, Professor, PhD.	FMST SUT
Miloš Čambál, Assoc. Prof. PhD.	FMST SUT
Peter Schreiber, Assoc. Prof. PhD.	FMST SUT
Roman Hrmo, Assoc. Prof. PhD.	FMST SUT
Milan Petráš, PhD.	FMST SUT
Andrej Dobrotka, PhD.	FMST SUT

### 22.7.2010

Andrej Dobrotka, PhD. Received the main prize of the Slovak Society of Physics for competition of research thesis of young physicists

### 22.7.2010

Memorial medal of Aurel Stodola was awarded to Andrej Dobrotka, PhD.

### 18.11.2010

Milan Turňa, Professor, PhD. IWE become a honoured citizen of Čierny Balog

### 27.11.2010

Iveta Paulova, Assoc.Prof.PhD received the award Top manager of year 2009

### 17.12.2010

Alexander Čaus, Professor, DrSc. Become the Professor of the year 2010 at SUT.

#### Award of memorial medal of Aurel Stodola in year 2010

Prof. Dr. Gyula Patkó  
 Professor Dr. Konrad Osterwalder  
 prof.Dr hab. Inz.Stanislaw Adamczak, Dr h.c.  
 prof. Karl Wetzig  
 prof.Dr.Ing. Bohuslav Mašek

### On 20. 1. 2011

during the New-year meeting, the dean Prof. Dr. Ing. Oliver Moravčík gave **awards from 2010 in these categories:**

#### The best habilitation thesis

Milan Nad': Structural modification of vibrating mechanical systems

#### The best project team

Team – Centre of excellence:

1. Jozef Peterka, Professor, PhD.
2. Peter Pokorný, Assoc. Professor, PhD.
3. Ladislav Morovič, PhD.
4. Ivan Buranský, PhD.
5. Eva Kucháriková, PhD.
6. Matúš Beňo (student PhD.)
7. Marek Zvončan (student PhD.)
8. Martin Kováč (student PhD.)

#### The best publication at FMST SUT

Miroslav Urban, Professor, DrSc.

During the New-year meeting of employees and friends of the faculty, the dean of the faculty **Oliver Moravčík, Professor, PhD.** was awarded with:

- the Leibniz-Medail of IFW Dresden

and

- memorial medal issued on the occasion of the 160th anniversary of the establishment of the University of mining- University of Technology in Ostrava „ For contributions and long-term development of university with industry“, which was awarded by the rector of the University of Mining in Ostrava TU Ostrava.

#### Publishing activities

The aim of edition activity of FMST SUT is to secure the fast transfer of results of research knowledge development and education into syllabi via publications and to enable access of students to new knowledge and improve the teaching process.

Edition activity at FMST SUT was made in 2010 with:

- publication activity of Publisher SUT Bratislava,
- edition plan of FMST SUT in Trnava for 2010 approved by Scientific Board,
- additional activity of publisher AlumniPress of FMST SUT in Trnava, scientific monographs of the FMST SUT approved by the dean of the faculty,
- processing of conference periodical publications to the events at the FMST SUT,
- editorial activity of the both journals of FMST SUT: Research papers of FMST SUT with the seat in Trnava; and Materials Science and Technology.

Editorial activity has an important role especially from the perspective of publication activities of faculty authors and it has a strong presentation importance of the faculty.

### Number of published publications at FMST SUT in year 2010

monographs	textbooks	scripts
15	4	9

### Periodical publications of FMST SUT in year 2010

Title of journal	Number of volumes	Number of contributions
journal Research papers	2	33
journal Materials science and Technology	6	41
books of contributions	6	127

In 2010 the contract with the company Versita was signed, where the basis is that the journals of FMST SUT can be published by service MetaPress.

### Alumni



From year 2007 there is the project Knowledge regulated system of observation tools of graduates career in the integration process to the EU, led by PhDr. Kvetoslava Rešetová, PhD., which was approved in the frame of the call of the Agency Ministry of Education Slovak Republic MŠ SR - SORO for Operation program Education.

The strategic aim of the project is focused on support of quality improvement and flexibility of tool creation for observation of student careers as an output of the adjustment of the education system to the needs of the knowledge society.

In year 1937 the founders of the first Slovak University of Technology did not expect that it would be the best university institution in technical disciplines of our country. Graduates of FMST SUT belong to a numerous community of these who were successful in technical university study. The identity of our

faculty, developing feedback between industrial and education and research institution, has and will have an extraordinary importance for next quality improvement of preparation of specialists who are needed with industry of the Slovak Republic as a part of the European Union – the most renewed forming an international world complex.

These are challenges brought by globalisation and we want to react with creation of a graduate society under the title **Bank of quality – Alumni**. The Bank of quality of graduates will create conditions for feedback in accordance with acquisition of relevant information on career possibilities of graduates of FMST SUT, for identification of requirements of graduates in practice, measurement for rationalization and flexibility of changes in study programmes from the perspective of real needs. The Bank of quality will be a space for experience exchange and acquisition of knowledge, not only from the academic life,

but also experiences from industrial practice. Its aim will be to discover conditions and possibilities of graduate careers, map needs and barriers of employment of graduate labour force, design a profile of graduates through models of employer needs, to find out problems with development of competence skills and to bring information which could innovate the study programmes so that they would consider development at labour market.







INSTITUTE  
OF MATERIALS  
SCIENCE





# INSTITUTE OF MATERIALS SCIENCE

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**tel.:** ++421918646038  
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## Institute Departments

- Department of Materials Engineering
- Department of Physics

## Staff

- Professors: 8
- Emeritus Professors: 3
- Visiting Professors: 2
- Associate Professor: 12
- Senior Lecturers: 14
- Research Fellows: 8
- PhD Students: 20

## Study programmes

- Materials Engineering
- Processing and Application of Non-Metals

## Research subjects

- Complex metallic alloys and other structurally complex materials
- Advanced alloy steels for energy industries
- Lead-free solders
- Materials with condensed non-crystalline structures
- Nano-structured material
- Computational chemistry in materials science
- Thermodynamic modeling and prediction of phase equilibria
- Coatings and surface treatment

## RESEARCH CHARACTERISTICS

The Institute of Materials Science was established on the 1st of January, 2007, joining former departments into a larger unit thereby achieving an improvement of scientific and research activities as well as of international cooperation.

The Institute is responsible for materials and physics oriented courses at FMST. For the bachelor degree, the Institute guarantees the study program Materials Engineering; for the engineering and doctoral degrees it guarantees the study programs Materials Engineering, Processing and Application of Non-metals as well as Surface Engineering of Advanced Materials.

The research and expertise activities of the Institute are aimed at crystallization of metals and alloys, tool material and nickel-based alloys, powder metallurgy, bio-compatible materials, stainless steels, steels for power plants, weldability of steels, magnetic materials, thermal treatments and surface modification of materials, complex metallic alloys, grain boundary engineering as well as ceramic and polymer materials.

At present, the Institute possesses seven laboratories equipped with a number of modern experimental techniques (for example: high resolution transmission electron microscopy Philips CM300, X-ray diffractometer Philips PW 1710, differential scanning calorimeter Perkin Elmer). In areas of research and education, the Institute has established intensive cooperation with local and foreign institutes. It became a part of a network of foreign academic and commercial institutes which gives an opportunity for extensive exchange of students and academic staff members of the Institute, contributing to dynamic and sustainable professional growth. The most prestigious academic institutes which could be mentioned are the Leibnitz Institute of Solid State and Materials Research Dresden (Germany), the Institute Jožef Stefan, Ljubljana (Slovenia), Vienna University of Technology (Austria), the Research Center Dresden-Rossendorf (Germany), the Institute of Physics of Materials, the Academy of Sciences of the Czech Republic, Brno (Czech Republic), the Faculty of Mechanical Engineering, University of Ljubljana (Slovenia), University of Rennes (France), Faculty of Physics, University of Bucharest (Romania) and other Slovak universities and institutes of the Slovak Academy of Sciences. From the list of industrial partners the most recognized are Bekaert SA (Belgium), Böhler - Edelstahl and Branson div. Emerson.

The Institute has a long term tradition of cooperation with regional industrial partners such as: INA Skalica, Ltd., Skalica, VUJE corp., Jaslovské Bohunice, ZF Sachs Slovakia, corp., Trnava, Zlievareň, corp., Trnava, HKS Forge Ltd. Trnava; MANZ, corp. Nové Mesto nad Váhom; SONY Slovakia, Nitra; Samsung Electronics Slovakia, Galanta, Voderady; Faurecia Trnava; PSA Peugeot Citroen, Trnava; Noble International, Ltd. Senica; TRW Steering System Slovakia Ltd., Nové Mesto nad Váhom; Hella Lighting Slovakia, Kočovce; Kinex-KLF, corp., Kysucké Nové Mesto; PSL, corp. Považská Bystrica; EMO, corp. Mochovce; Johns

Manville, corp. Trnava; Sauer Danfoss, corp., Považská Bystrica; ŽOS corp., Trnava; PFS, corp., Brezová pod Bradlom; Kompozitum Topoľčany; Fremach, Trnava; Slovalco, corp. Žiar nad Hronom; IMS Kupa, corp. Nováky, VIPO Partizánske.

## CENTRE OF EXCELLENCE

### Center for Development and Application of Advanced Diagnostic Methods in Processing of Metallic and Non-metallic Materials

The main focus of the project is the establishment of a centre of excellence with emphasis on the development and application of advanced diagnostic methods in processing the metal and non-metal material. This is within the framework of item number 2.1 of the operation program oriented on research and development entitled "Increasing the quality of the workplace and support of excellent research, with a focus on the strategic areas important for next developments of economy and society". Therefore the main aim of the project, which has been approved, is to build a research infrastructure in accordance with the Innovation policy of the second generation, meaning at the regional level and in accordance with priority No1 of the Innovation strategy of the Slovak Republic: "Infrastructure with a high quality and an effective system for innovation development". In this way the proposed centre of excellence will support realization of the strategy of competitiveness in the Slovak Republic into 2010, which is an important transfer into innovation policy of the third generation, with the task of integrating innovations into all policies.

We plan to create a modern dynamic centre of excellence. The centre will focus on analytical methods for applying the most contemporary knowledge on the interaction of electron and laser energies with masses of various types. It will also focus on advanced detection systems with high sensitivity, modern mechanical processes, and observation of electrical and non-electrical variables oriented to the evaluation of specific properties, especially progressive metal and non-metal materials prepared by the most modern technological processes. We expect that the project will help to improve the research infrastructure in the Trnava region, and provide a direct connection to the rest of Slovakia (the Faculty of Materials Science and Technology cooperates with dozens of production companies throughout all of Slovakia and with other education and research institutes). The project will also connect the Faculty to other European and Asian research bodies (we cooperate with POSTECH - Pohang University of Science and Technology, South Korea, IFW and FZD in Dresden, Germany, Bekaert in Zvevegem, Belgium). Finally, the project will improve the quality of education and popularise science and technology among unspecialized people.

The content of the project has the aim of supporting a concentration of the best faculty employees in a monothematic centre based on the application of the most modern experimental processes associated with specific material properties, consistent with the ob-

jectives of the Materials study program and the study field of Physical Metallurgy. Activities are focused on the attraction of secondary school students who will potentially study fields of technical materials. The project will also provide access for all interested specialists to modern technical equipment in the centre, as well as the organisation of seminars and summer schools and expansion of materials research and its successful representation in the media.

The centre will be equipped with the following modern technical equipment:

- A High Resolution Scanning Electron Microscope operating with a thermal FEG cathode and equipped with compatible detection systems EDS, WDS and EBSD along with particular equipment for preparation of samples by ion milling.
- Laser Confocal Microscope with two independent beams for wavelengths 400 and 600 nm.
- Universal Testing Machine for evaluation of mechanical properties of metal and non-metal materials
- Testing equipment for the observation of dynamic failure processes
- Equipment for measurement of direct and alternating conductivity of non-metal materials at high temperatures
- Spectral analyzer for measurement of direct and alternating impedance and modular spectra of non-metal materials and composites
- Rotation Viscosimeter
- Vulcanization Measurement Equipment

## International Projects

### COST MP0602 (COST) (05.08.2008-15.05.2011)

Jozef Janovec, Professor, DrSc.

#### Preparation and characterisation of lead-free solders

The project is focused on processing and investigation of properties of novel lead-free solders for high-temperature applications. New solders developed in the frame of the project will consist of various combinations of tin, zinc, cobalt, silver, copper and rare earth elements. Thermodynamic and kinetic aspects of soldering will be studied. Phase equilibria and formation of intermetallic phases at the solder/substrate interface will also be investigated.

### IFW FMST SUT (04.07.2008-31.12.2010)

Jozef Janovec, Professor, DrSc.

#### Investigation of fine structures in metallic materials using TEM

With the intention to improve the investigation of fine metallic structures at the Faculty of Materials Science and Technology of SUT, the IFW provided financial resources for purchase of ancillary units for TEM (Delta Abrasiment).

### DAAD 1 (01.01.2009 - 31.12.2010)

Jozef Janovec, Professor, DrSc.

#### Metal matrix composites reinforced with complex metallic alloys

Complex metallic alloys display several interesting properties, such as good corrosion resistance and high-temperature strength,



however, they are brittle at room temperature in the single-phase form, which limits their use in engineering applications. A way to improve the room temperature ductility is the development of a heterogeneous microstructure combining a soft metallic matrix with second-phase CMA particles. The CMA particles act as a strength-bearing component, while the metallic matrix supplies ductility. The project is focused on the production, the structure character and the mechanical testing of high-strength metal matrix composites reinforced with complex metallic alloys.

**EFDA- European Fusion Development Agreement - Research programme in the field of thermonuclear fusion (01.01.2010 - 31.12.2010)**

Miroslav Urban, Professor, DrSc.

**Chemical sputtering: Computational modelling of interactions in the carbon-containing films exposed to molecular ions and hydrogen. EUROATOM CU**

The project aim is to know processes via methods of computer modelling which can be by interaction of products of low-temperature plasma with walls of a reactor by nuclear fusion (plasma – wall interactions). There is the most frequent expectation in construction of fusion reactor walls (particularly in a divertor) that a construction material will be wolfram covered with layer of amorphous hydrocarbon films (a-C:H). One of the project aims is to study the stability and the reactivity of various ions which can occur during interaction of plasma particles with divertor walls, also their capture and release into an area of the reactor. Layers of poisonous BeO are alternative materials which are considered in processes of plasma products interaction. We take into account in our project also other alternatives, e.g. based on compositions of  $B_xC_yN_z$ , - the content determines if they can create firm layers with properties which are necessary in the material to provide an interaction of the plasma components with reactor walls.

**Bekaert, Zwevegem, Belgium (26.05.2008-25.05.2010)**

Martin Kusý, Assoc. Prof. PhD.

**Progressive materials, processing and automation**

The subject of the project will be research on advanced materials, processing and automation technologies for direct manufacturing and application. The aim of the project is to bridge basic and applied research in the field of advanced materials with application and manufacturing leading to competitiveness and sustainable growth of both partners. A valuable and unique aspect of the research project is broad involvement of students of master and doctoral degree in up-to-date research activities.

**National Projects**

**APVV-0009-07 (01.01.2008- 31.12.2010)**

Svetozár Demian, MSc. Eng.

**Metallurgical preparation and research of new intermetallic materials for extreme stress conditions**

The project is focused on the development of an optimal metallurgical preparation of high-

reactive and heavy melting intermetallic based alloys (TiAl, TiB<sub>2</sub> and others) and the research of new systems appropriate for extreme conditions characterised especially by a high temperature, an aggressive environment, a high mechanical and thermal load. The required chemical composition and lower price of new generation of polyphase intermetallic alloys on the base of TiAl can be reached with precursors prepared by an original way from output material isostatic compacting reaction that will follow in remelting or plasma arc furnace. This approach will provide significant improvements in their chemical homogeneity, high flexibility in the alloy necessary ingredients to minimize impurities, thereby obtaining the desired properties for use in extreme conditions.

**VEGA 1/1000/09 (01.01.2009- 31.12.2012)**

Milan Ožvold, Professor, PhD.

**Properties of soft lead-free solders and their reactions to interface with the substrate in liquid and solid form.**

Noble earths are added to improve properties of lead-free solders on base of Sn/Cu/Ag. We added cerium in small amounts (0.1, 0.2 and 0.5 wt%) into eutectic compounds of solders and we compared their properties. Observations showed differences in solders microstructure in dependence on content of Ce. We have studied morphology intermetallics which are formed on the range of fluid solid and copper plate in dependence on time of soldering. The most significant changes were observed for solders SnAg<sub>3,5</sub> and SnAg<sub>3,5</sub> + 0,5% Ce, by time of soldering 256 seconds. Layer of intermetallics was destroyed in solder with Ce and particular units of the phase Cu<sub>6</sub>Sn<sub>5</sub> did not grow to big shapes and dimensions. Mechanical properties of solders were also measured. Shear strength of solder with eutectic solder SAC357 is significantly higher than one with hypoeutectic solder with low content of silver SACX0307. However relative decline of shear strength of SACX0307 is minimal after ageing 200 hours at temperature of 150°C, while it is significant by eutectic solders.

**VEGA 1/0011/10 (01.01.2010 - 31.12.2010)**

Jozef Janovec, Professor, DrSc.

**Characterization of structurally complex materials to improve their application possibilities.**

The project is focused on research of complex metal alloys and nanostructure of materials. Alloys of type Al-Mn-TM and Al-Pd-TM in annealed state (TM = transition metal) and Al-CMA composites (CMA = complex metal alloy) are characterised with x-ray diffraction, TEM (HRTEM), DTA, HR SEM, EDX, WDX and EBSD, as well as thermodynamic modelling. Experiments results and theoretical knowledge will help to calculate basic thermodynamic parameters of studied systems and identified phases. Application of progressive experimental methods creates prepositions for innovations in methodology area. Solving of the project will enlarge basic research knowledge with possible transfer into praxis.

**VEGA 1/0126/08 (01.01.2008- 31.12.2010)**

Mária Dománková, Assoc. Prof. PhD.

**Improvement of microstructural stability and corrosion resistance of stainless steels controlled by precipitation of secondary phases.**

The process of the secondary phase precipitation controls the mechanical and physical properties of stainless steels. The main goal of this project is characterisation of the influence of selected factors (chemical composition, annealing conditions, deformation) on kinetics and thermodynamics of the secondary phase precipitation in stainless steels.

**VEGA 1/0173/08 (01.01.2008- 31.12.2010)**

Viera Trnovcová, PhD.

**Physical properties of optical crystals and glasses of heavy metal halides, chalcogenides and oxides**

To study optical, mechanical, thermophysical and electrical properties and phase transition in crystalline, glassy and composite heavy metal halides, oxides, oxides and chalcogenides doped with rare earth, for applications in optonics, fiber optics, superionics and dosimetry. To determine relations between properties, composition, defect structure and preparation technique.

**VEGA 1/0148/08 (01.01.2008- 31.12.2010)**

Roman Moravčík, Assoc. Prof. PhD.

**Analysis of tool materials prepared by progressive powder metallurgy processes**

The project will be primarily oriented to the analysis of distinguished parameters of the atomisation process and to distinguished characteristics of the microstructure of rapidly solidified powder particles, which were prepared from highalloyed materials of tool steels and properties with respect to application possibilities. The obtained knowledge will be the base for a correlation model design which simulates relations between rapid solidification of materials produced by powder metallurgy processes.

**VEGA 1/0840/08 (01.02.2008- 31.12.2010)**

Andrej Antušek, PhD.

**Ab initio calculations of NMR properties with electron correlation and relativistic effects and vibrational corrections**

This project is focused on precise ab initio calculations of NMR properties of molecules. We will explore trends of all important contributions such as electron correlation effects, relativistic effects and vibrational corrections for NMR properties of selected systems. The accuracy which can be reached using "state of the art" quantum chemical methods will be evaluated by comparison of theoretical results and gas-phase NMR experimental values.

**VEGA 1/0648/10 (01.01.2010 - 31.12.2011)**

Filip Holka, PhD.

**Accurate ab-initio calculation of the potential energy hypersurface of ozone for the theoretical molecular**

The project is focused on ab-initio calculation

of global potential energetic hyperarea of basic electronic state of ozone with a sufficient accuracy for next application in theoretical rotation-vibration spectroscopy. To gain this aim we will study into details a convergence of hyperarea to a limit of complete base, relativistic effects and contribution of internal electrons correlation. One important part of project is the calculation of adiabatic correction and analysis of its influence on a shape of hyperarea. According to this analysis we will design an optimal methodological access which is appropriate for a construction of global energetic hyperarea and we will make a calculation.

**VEGA 1/0645/10  
(01.01.2010 - 31.12.2011)**

Stanislav Minárik, Assoc. Prof. PhD.

**Analysis of irreversible changes in condensed non-crystalline structures**

The project is focused on a study of causes of permanent (irreversible) changes in selected condensed non-crystalline structures. The main attention will be on processes of polymerisation and photodegradation of plastics, vulcanization of rubber compound as well as irreversible changes in glass structure. Structure modifications are usually typical by creation of free spaces, new parts and phases which can be observed by different way. In case of the mentioned non-crystalline substances the structure modifications can not be reflected in a visible destroying of structure symmetry. Methods of their identification and evaluation are therefore more complicated than crystalline substances. We will study the examination possibilities of process character via different experimental methods based on IR and UV-VIS spectroscopy, dielectric spectroscopy and thermal analysis. The project aim is a search of correlation possibilities between results of mentioned methods and design of models for description of irreversible processes in non-crystalline structures.

**KEGA 327-010STU-4/2010  
(01.01.2010 - 31.12.2011)**

Marián Kubliha, Assoc. Prof. PhD.

**Promotion of new responsibilities for IT application in materials research and education**

The project is focused on an improvement of intellectual skills of graduates of the II. and III grade of university study in area of preparation and management of technical experiment supported with IT technology, especially correct selection, application of communication systems of measurement appliances, technological equipment, sensors, etc. The aim of project is to prepare and implement a subject processed in a specialised laboratory into syllabus. Students can gain new competencies which will increase their ability to be successful at labour market and workplaces which are using a top technology. We expect an increase of research potential and the growth of flexibility of graduates.

**APVV SK-CZ-0143-09  
(23.03.2010 - 31.12.2011)**

Co-researcher Vladimír Labaš, Assoc. Prof. PhD.

**Addressing the technology of special glasses using physical methods**

The project is focused on a support of cooperation between Slovak and Czech partner in area of preparation and testing of physical properties of special glass. It is the study of causes of permanent (irreversible) changes in structure of glass. Structure modifications are usually typical by creation of free spaces, new parts and phases which can be observed by different way. In case of the mentioned non-crystalline substances the structure modifications can not be reflected in a visible destroying of structure symmetry. Methods of their identification and evaluation are therefore more complicated than crystalline substances. We will study the examination possibilities of process character via different experimental methods based on IR and UV-VIS spectroscopy, dielectric spectroscopy and thermal analysis. The aim of project is a search of possible correlations between mentioned methods and proposing of models for description of irreversible processes in non-crystalline structures. The project will support also a cooperation with French partner who cooperates with both workplaces.

**LIST OF SUBJECTS GUARANTEED BY THE INSTITUTE**

- Advanced materials and technologies
- Applications of statistical and physical methods in technical experiments
- Applied electrotechnics and electronics
- Bachelor project
- Bachelor thesis
- Composites
- Corrosion and surface treatment
- Data processing and simulation
- Degradation processes and prediction of lifetime
- Design of plastics products
- Diploma project
- Diploma thesis
- Dissertation project
- Economics of non-metallic materials production
- Electronics
- Electrotechnics and electrical drives
- Electrotechnics and electronics
- Engineering materials
- Experimental exercises from physics
- Experimental methods of materials investigation
- Fractography
- Fundamentals of economics of plastics processing
- Fundamentals of mechanical testing and defectoscopy of materials
- Fundamentals of plastics processing
- Heat treatment of materials
- Heat treatment technology
- Chemical heat treatment
- Machine tools for plastic processing
- Machinery and devices for plastics processing
- Material and structural databases
- Materials science
- Materials for energy
- Mechanical testing and defectoscopy of materials
- Metallic materials science
- Metallography
- Methodology of the technical experiment
- Methods for analysis of structure and properties of materials
- Methods for structure analysis of materials
- Methods of materials investigation
- Metrology and testing
- Metrology and testing of non-metallic materials
- Modeling of phase equilibria
- Non-metallic materials
- Non-metallic materials processing
- Non-standard processing of plastics
- Novel materials and technologies
- Pedagogical activity
- Physical properties of materials
- Physical modeling
- Physical attributes of materials
- Physical chemistry
- Physical measurement methods of non-metallic materials
- Physical metallurgy
- Physical projection and modelling
- Physics for engineers
- Physics
- Practise
- Processing and applications of plastics
- Processing technologies of non-metallic materials
- Production technologies of plastics tools
- Professional translation
- Quantitative metallography
- Research work
- Safety of electrical devices
- Selected topics of solid state physics
- Selected topics of modeling and optimization of properties of non-metals
- Selected topics of electrical and optical properties of non-metals
- Selected topics of ceramic and glassy materials
- Selected topics of materials based on polymer substances
- Selected topics of mechanical and thermal properties of non-metals
- Selected topics of surface engineering
- Selected topics of advanced technologies of non-metals
- Semiconductor materials and technologies
- Structural materials of nuclear power plants
- Structure and properties of polymers
- Structure and properties of non-metallic materials
- Technical Materials
- Technologies of special alloys
- Technology of coating
- Technology of materials production
- Technology of special alloys
- Theory and technology of ceramic materials processing
- Theory and technology of glass processing
- Theory and technology of plastics processing
- Theory of materials production
- Theory of materials treatment
- Theory of phase transformations
- Tool materials
- Utility properties and materials design
- Vacuum engineering and technology
- Vacuum technique and technology

## GRADUATE THESES

## Bachelor Theses

**Ambrusová, A.:**

Characterization of phases in selected complex metallic alloy based on Al-Pd-Co system

**Balážik, P.:**

Metallographic preparation of lead free solders

**Bašnák, T.:**

Determination of light absorption coefficient depending on the different of translucent substances on the wavelength

**Beták, M.:**

The calculation of the phase balance for steel classes AISI 316

**Bíró, R.:**

Application of polyurethane in the praxis

**Bogár, P.:**

Evaluation of properties of recycled plastics

**Bucha, M.:**

Evaluation of attributes of a welded joint

**Cisár, J.:**

A description of the uses of spectrometric methods for the analysis of materials

**Čavojský, P.:**

Effect of heat treatment on the resulting mechanical properties of Al alloy produced by powder metallurgy route

**Fridel, M.:**

Eddy currents as means of determining the level of degradation of centrifugally cast tubes

**Grejták, E.:**

Measuring of elastic moduls of solid materials using pendulum methods

**Hlavičková, G.:**

Modelling of phase equilibrium in lead-free solder type SAC

**Hlavna, M.:**

Methods of creating thin films

**Holota, L.:**

Effect of Foreign Shards on the Quality of Glass

**Horecká, I.:**

Analysis of a broken driving shaft used in construction machine

**Hutár, M.:**

Thermal expansion of stainless steels

**Indrišková, P.:**

Influence of parameters sintering on electrical conductivity ferrites ceramical materials

**Ježovič, J.:**

Microscopic analysis of the compact of K390 Microclean tool steel

**Ježovičová, J.:**

Influence of cobalt content on the microstructure of tool steel compacts

**Jozefák, M.:**

The temperature effect and rate of foamable precursor on resultant structure of aluminium foam

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The material aspects of the hot cracking of welded joints of austenitic steels

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Description microstructure of a highly reactive and high melting alloys based on titanium

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The influence of fillers on reology compound properties

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**Kozánek, P.:**

Effect of isothermal annealing on the grain size of austenitic Stainless steel AISI 316

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Boriding of tool steel K 190

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The analysis of the surface layers of instrumental steels

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The Influence of Geometry of a Soldered Joint on its Mechanical Properties

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Characteristics and properties of unleaded solders

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Measurement of thermal dependence selected dielectric parameters of rubber blends

**Molnár, T.:**

Identification of hard materials elastic modulus in the shear pendulum motion method

**Nichta, R.:**

Extrusion of magnesium chips

**Novák, B.:**

Characteristic distribution of deformation field in studied sample by optical interferometry

**Novák, M.:**

Microstructural evaluation of deformation level of grain after two-step drawing of tube from steel STN 411523

**Ondruška, M.:**

The Influence of the Plasticizer Addition on the Ferrite Ceramic's Structure

**Peller, P.:**

Preparation technology of high reaction titanium-based intermetallic alloys

**Skuhra, R.:**

Investigation of the structural stability of TiC particles in aluminium matrix

**Sobota, J.:**

Measuring the basalt ceramic electrical characteristics

**Šimončíč, J.:**

Evaluation of the microstructure of cast intermetallic alloys based on titanium

**Škultéty, P.:**

Investigating of Optical Features for Chalco-gen Glasses

**Šmahovský, L.:**

Effect of formulation on selected properties of rapidly solidified powders NiCrSiB

**Takáč, G.:**

Diffuse boronizing steel K110

**Takáč, L.:**

An overview of hot isostatic pressing

**Tomčík, M.:**

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**Tóthová, A.:**

Summary of heat treating of titanium and titanium alloys

**Turanský, M.:**

Analysis of the microstructure of leaded and lead-free solders

**Urbanovský, M.:**

Application of plastics for motor-cycles vehicles

**Varga, Z.:**

Influence of the plastic deformation at various temperatures on the density of dislocations in selected steels

**Volner, P.:**

Isothermal annealing influence on a measurement of grain microstructure of steel AISI L 316

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**Abelovič, T.:**

Increasing the operating reliability and durability of rail welding

**Bakulár, T.:**

Microstructure and properties of Basaltic ceramics

**Baranyai, S.:**

Structure and properties of oxid eutectic composites

**Benovic, J.:**

Analysis saturation of boron layers on tool steel M390

**Bezuch, L.:**

Modeling of flow and cooling processes of metallic materials in semi-solid state

**Bohovičová, J.:**

Laser scribing of wires

**Borsuk, D.:**

Characterization of secondary phase precipitation in 17Cr-10Mn-3Mo-0.5N austenitic steel

**Czibor, P.:**

Metallographic and fractographic analysis of coated cutting tools

**Černý, R.:**

The use of Kalman filter in measuring the Young modulus of elasticity holographic interferometry

**Čietek, J.:**

Interaction of solders with selected types of materials

**Daxner, P.:**

Study of the influence of plastic deformation and thermal exposure on the precipitation of secondary phases in austenitic stainless steel

**Grundeiová, I.:**

Boride layer analysis of tool steel K 190

**Haramia, J.:**

Analysis of a Damaged Staple Tool for Small Holes

**Horváth, V.:**

The characteristic of property changes in the HAZ of WELDOX 700 high-strength steel welded joints

**Chrenčík, F.:**

Microstructural analyse of three-axis deformation of steel STN 411353

**Janotová, I.:**

Structure and selected properties of rapidly quenched nanocrystalline Fe-B based magnetic systems

**Javorčík, J.:**

Effect of welding parameters on microstructure development in different zones of weld joint S35C steel welded by friction stir spot welding

**Kalvasterová, D.:**

Analysis of the solder joints

**Kamocsa, I.:**

Analyzing the modeling of phase equilibrium in multicomponent heterogeneous systems

**Kapičák, A.:**

Diffusion boronizing of the steel Vanadis 6 for cold work

**Kolínek, M.:**

Anticorrosive protection of the iron structures with the aid of the paint systems

**Kolkusová, I.:**

Investigation of optical properties of polymer structures

**Konopka, P.:**

Design and technology of X-ray beam conditioners

**Kozánek, O.:**

Microscopic analysis of compacts prepared from tool steels S590 Microclean and S790 Microclean

**Krajčovič, M.:**

Effect of long-term operation on the changes of the austenitic steels properties of the primary circuit NPP VVER-440

**Krajčíčková, Z.:**

Analysis of selected properties of solders

**Longa, P.:**

Valuation the degree of deformation in volume forming alloys

**Majerníková, M.:**

Diffuse boronizing steel K245 for cold work

**Margorínová, S.:**

The effect of the temperature operation on the development of microstructure centrifugally casted of the reforming stove-pipes type 24Cr35Ni

**Messing, M.:**

The use of plastics in the logistics on the base of injected molding products

**Mičková, M.:**

Observation of stresses present in high strength steels weld joints

**Mičuda, M.:**

Reparation of cutting tool by hard surfacing

**Miškové, M.:**

The characteristic of property changes in the HAZ of P460 high-strength steel welded joints

**Nagy, T.:**

Analysis of the microstructure and properties of solder joints

**Nagyová, E.:**

Study of recrystallization process in Ti6Al4V alloy

**Nógely, R.:**

Transformation in rapid cooling metal alloys with changes selected physical properties

**Olláry, A.:**

Analysis of damaged membrane springs

**Ostrožlík, P.:**

Comparison of different glow lay on basalt paint coats

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Logistic application of plastic packaging films

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Determining the Young modulus of elasticity of thin rods of the bending deformation

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Relation between the structure of ferromagnetic cover on borders of superconducting tape and the tape performance

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Influence of orientation of short carbon fibres on thermal expansion of metal matrix composite

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Thermal expansion of magnesium composites reinforced high module carbon fibers

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Influence of deposition parameters on the structure and stress characteristics of thin layers

**Sandtner, J.:**

Transformations in rapid-cooling metallic alloys Fe(95-x)Sn5Bx (x= 15, 17, 20) through DSC and DTA

**Skrutek, I.:**

Effect of post-weld -heat-treatment on operational cracking of weld produced from material 800H

**Slobodová, Z.:**

Analysis of fracture characteristics of heat treated 50CrMo4 steel

**Ševčík, M.:**

Study of weld properties of martensitic steel VM12-SHC

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Hygienic standpoints of plastics packaging films

**Štepanovský, O.:**

Influence of Parameters of Thermal Processing and Hardening Medium on Content of Residual Austenite

**Švantner, T.:**

Temperature dependent evolution of secondary phases in Cr-Mn-N austenitic steel

**Uhrinec, B.:**

Analyzing the modeling of phase equilibrium in multicomponent heterogeneous systems

**Vacho, J.:**

Quality Impact of developing technology to physical characteristics of the optical fibre

**Vígh, T.:**

Analysis of the properties of pipes from the new 9 – 12Cr steels after induction bending

**Žilinský, A.:**

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**INSTITUTE  
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# INSTITUTE OF PRODUCTION TECHNOLOGIES



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## Institute Departments

- Department of Welding
- Department of Machining and Assembly
- Department of Foundry
- Department of Forming

## Staff

- Professors: 6
- Emeritus Professors: 3
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- Senior Lecturers: 7
- Research Fellows: 7
- PhD Students: 58

## Study programmes

- Computer-Aided Production Technologies
- Production Technologies
- Master Degree:
- Machining and Assembly
- Computer-Aided Design and Production
- Welding
- Industrial and Art Casting
- Machine Technologies and Materials

## Research targets

- theory of machine parts manufacturing, creatics, measurement and assembly
- CIM, CAD/CAM, CAPP, CAQ, CAA, RE
- quality of measurement
- computer simulation
- 3D art engraving
- formalibility of new materials
- high parametrical forming
- manufacturing of dies
- experimental methods of forming
- soldering and brazing
- explosion welding
- weldability of steels
- welding of dissimilar materials
- surfacing and tribology
- adhesive bonding
- foundry technology – preparation of molten metal
- preparation of moulding materials
- powder metallurgy – technology of powder processing
- art foundry
- development of new foundry alloys
- plasma-electrolytic technology – surface treatment of metals
- surface layer hardening

## RESEARCH CHARACTERISTICS

The research of the Institute of production technologies is oriented to the industrial technologies with respect to research and development in the sphere of high-tech technologies. The main fields of the industrial technologies at the Institute of production technologies are: machining, forming, foundry and welding.

Key directions of scientific research activity at the Institute of production technologies are focused on the support of the development of individual science and educational branches. It is safeguarded to the responsibilities for the special growth of workers. The attention is devoted first to the actual and prospective questions related to industrial technologies in conditions of SR, at which are made provisions for international trends as well as the integration processes to EU. The mark of scientific research work and activity is determined by originality of the scientific orientation of the teachers and scientific research workers, the material supply of the main workstations and the solution of scientific and socially best-known questions of social work. The Institute of production technologies is oriented to the trans-regional pedagogic and scientific activity in many aspects, cooperates with and is enlarging the co-operation with the more renowned scientific research institutes abroad. International co-operation in research is implemented mainly with the exchange of information, results, knowledge for education of PhD students (fellowships, educational visits, workshops).

The scientific directions of our main workstations are determined for the long term and cover the production and technological aspects of exploitation of all resources and solutions of actual questions in given branches. The layout of projects is oriented mostly to the production technologies in co-operation with industrial practices on the basis of actual global problems.

The central spheres of our scientific research are:

Production and control of components with complex forms and strict surface  
 Numerical simulation and optimization of production in surface and volume forming of metallic materials - prediction of formability  
 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  
 Tribology and surface engineering

All important and original results are presented at 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 for the solution of bachelor, diploma and PhD works.

## CENTRE OF EXCELLENCE

### Centre of Excellence for Five-Axis Machining (CE)

Five-axis machining is one of the main trends in cutting technology used for mould production. The term five-axis machining means cutting machine tools through which the movement carried out moves in five different axes simultaneously. The benefit of five-axis machining is the machine's ability to machine complex shapes in a single set-up and achieve a uniform surface with roughness being cultivated.

The Centre will have the opportunity to realize the basic research on 5-axis machining of complex shape parts, including control and measurement and will also be able to monitor the quality of cutting fluids and cutting processes. It will be able to provide for all levels of learning in education together with establishing an experimental base for doctoral researchers from Slovak and foreign universities, and also practitioners.

The ambition of the project is to help mould and die manufacturers (developers, designers, technologists, quality control persons, supervisors, young starting engineers and also skilled senior engineers) to mostly find theoretical and practical orientation (guidance) in this difficult cutting process of five-axis machining.

## INTERNATIONAL PROJECTS

### TOWARDS A COMMON RESEARCH PROJECT (01.10.2008-31.12.2011)

Jozef Peterka, Professor, PhD.

The main purpose of the project is to expand the theoretical concept of CAD-CAM-CNC on concept CAD-CAM-CNC-CAQ-CAD and experimentally verify this new concept in the field of manufacturing of free form surfaces and in the field of assembly parts with free form surfaces in the conditions of university.

### 6. FP EU (01.09.2009 - 31.12.2011)

Peter Šugár, Assoc. Prof. PhD.

#### Multivariate optimization of the metal spinning processes—research and development

#### Specific innovation objectives, state-of-the art, needs addressed, market impact and potential benefits.

The project of international applied research in cooperation with the research organisation Inpromat, S. Coop., Sondika (Spain) and production company Sandrik 1895, Limited Hodruša-Hámre, is focused on the research of influence of so-called induced plasticity of material which is formed in specific conditions of press plastic deformation, and its positive influence on forming of exploitative properties. These properties are observed on non-developed parts from thin sheets which are produced by the technology for bending rotation (technology of metal pressing).

## NATIONAL PROJECTS

### VMSP-P-0009-09

Koloman Ulrich, Professor, PhD.

### An electron technological complex for welding, surfacing and surface treatment of materials

The project subject is research of a technical solution for particular modules and function nodes of a laboratory model of university electron beam technological complex for industrial use. The subject technological complex is suitable for sophisticated industrial applications of high-tech electron technologies in areas of welding, creation of special layers and surface thermal treatment with use of a high-performance source of electrons with specific properties which will enable complex implementation for all mentioned applications. Its technical parameters will provide processing of solders according to the programmed trajectory of solder in a three-dimensional area.

### APVV-0057-07

(02.06.2008-31.12.2010)

Milan Marônek, Assoc. Prof., PhD.

#### Research of Welding and Forming of Nitrooxidatively Treated Steel Sheets

Nitrooxidative layers enhance significantly mechanical and anticorrosive properties of metal sheets. The project deals with the research of nitrooxidative layer making on metal sheets, the research of appropriate welding methods of such treated plates and with the study of forming and corrosive resistance of made weld joints. In the field of welding the basic characteristics of made weld joints will be studied (shape, structure, mechanical properties, weldability) by using the advanced technologies of welding of nitrooxidatively treated sheets.

### VMSP-P-0009-09

(03.09.2009-31.07.2011)

František Kolenič, PhD. – project participant for FMST – Koloman Ulrich, Professor, PhD.

#### A complex of technological electrays of welding, welding on and surface material treatment.

The project deals with a module and nets research of universal electronray technological complex and their integration into an independent functional unit. A subject complex enables the forming of welds in 3D according to the setted parameters. The size of weld to one transfer will be 80mm. There is a device of programming of technological ray movement. It forms unique surface layers with electronrays remelting. The fire-powder sprays are remelted. The added sprays or material in a wire form can be also remelted. It enables the surface treatment of metal materials without added material in the first phase (without surface setting) as well as in the liquid phase (with a surface setting). The complex is determined for specific industrial applications in welding, a forming of specific layers and a surface thermal material treatment.

### VEGA 1/0099/10 (01.01.2010 - 31.12.2011)

Alexander Čaus, Professor, DrSc.

The structure and property enhancement upon production of near-net-shape semi-products using technology of a direct hydrodynamic extrusion of castings



**VEGA 1/0354/08**  
**(01.01.2008- 31.12.2010)**

Stefan Podhorský, PhD.

**The technological and the environmental aspects of the plasma-electrolytic process used for stainless steel polishing**

The subject of the project is a new, unconventional method for polishing and surface finishing of stainless steel products - the technology of plasma polishing. The technology utilizes the physical effect of the electric discharges onto the metal surface sunken in an electrolyte.

**VEGA 1/0130/08**  
**(01.01.2008- 31.12.2010)**

Peter Pokorný, Assoc. Prof. PhD.

**Research of influence of CAM strategies on achieved dimension accuracy and roughness of machined surface in conditions of university Hi-tech laboratory**

The project is focused on research of the influence of CAM strategies on 3D milling (for example raster, spiral, offset, box etc.) and 4D milling of parts with free form surface on achieved accuracy of dimensions and achieved roughness of machined surfaces.

**VEGA 1/0060/08**  
**(01.01.2008- 31.12.2010)**

Jozef Bílik, Assoc. Prof. PhD.

**Numerical simulation and experimental verification of laser welded tailored blanks formability for the automotive industry**

The project submits a proposal of formability prediction of laser welded tailored blanks of different thicknesses and properties using the numerical simulation and its subsequent experimental verification. The aim of the project will be to observe the kinds of tailor welded blanks failure and welded joints location influence on their formability.

**VEGA 1/0381/08**  
**(01.01.2008- 31.12.2010)**

Roman Koleňák, Assoc. Prof. PhD.

**Study of the effect of physico-metallurgical aspect of high-temperature brazing on the structure of joints in metallic and ceramic materials**

The physico-metallurgical characteristics of high-temperature brazing of high-alloy steels Ti, Ta, Mo, Co alloys etc. were investigated, Structural characteristics of brazing alloy during high-temperature brazing were studied.

**VEGA 1/0842/09**  
**(01.01.2009- 31.12.2011)**

Milan Turňa, Professor, PhD. EWE

**Special methods for metallurgical bonding of hard-to-weld materials and their application in manufacture of new materials with high technical parameters.**

Design, experimental approval, and scientific reasoning of progressive metallurgical bonding of special and combined materials. A selection of special technologies of welding, soldering, etc. or hard-to-weld materials and materials sensitive to degradation in the process of technological processing. An application of new technologies of metallurgical bonding for manufacture of special materials with high technical parameters. Here can be

mentioned for example the technologies of solid state welding (explosion, diffusion, MPW:FSW), welding and soldering with concentrated power sources (LB, EB, IB), RS and WS soldering. Engineering of special surfaces. Simulation of technological processes. Diagnosing the structural stability of fabricated joints by thermodynamical calculations with utilisation of CALPHAD program and databases for elucidation of mechanisms of joint formation. Design of workplace for explosion welding and building the laboratory for diffusion bonding and soldering with induction heating.

**VEGA 1/0111/10**  
**(01.01.2010 - 31.12.2011)**

Erika Hoďúlová, PhD.

**Research of the creation and growth of the reaction products in the area of interface solder joints produced by the environmentally suitable alloys in consideration of lifetime and reliability**

The study of the interface of solder joints made by lead-free solders and the identifying of reaction products which are created in soldering process for low and high temperatures. Acquisition of knowledge on creation and growth of the reaction products in formed lead-free solder joints. Calculation of diffusion coefficient and activation energy in soldering process and activation energy in the diffusion process which brings a complex picture on the mechanism in the process of soldering. It is important to describe the mechanism of solder joint formation with a possibility of influence on joint quality to understand better reactions by soldering. Designed steps of calculation of reaction products rate defines the lifetime and reliability of solder joints.

**VEGA 1/0383/10**  
**(01.01.2010 - 31.12.2011)**

Matej Beznák, Assoc. Prof. PhD.

**The determination of suitable parameters for precision casting production by centrifugal spin casting into silicon moulds.**

The project subject is a method of centrifugal spin casting of low-melting alloys into silicon moulds with Tekcast method. The priority aim is to determine a technological process and appropriate parameters by production of moulds and to provide the highest possible productivity, exactness and quality of castings.

**KEGA 3/6370/08**

Peter Šugár, Assoc. Prof. PhD.

**Innovations in teaching of production technologies and materials on base of e-learning.**

The project which is in cooperation with KVMT FEVT TU Zvolen, is focused on problem solution by implementation of electronic information tools to the education process in the first and second degree of technical university study. It solves the question of intensification of teaching process with the aim to remove the problem of knowledge volume increase which is needed for study programme in specific time. The project output is a practical example of bilingual multimedia web application which presents an evaluation problematic of

mechanical and technological properties of metal and non-metal technical materials.

**LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE**

- Assembly Technology
- Assembly Technology and CAA systems
- Assembly Theory
- Atelier of Modeling and Production of 3D
- Products
- Bachelor project
- Bachelor thesis
- Basis of Assembly
- CA systems and computer simulation processes
- CAD/CAM Systems
- CAPP systems of Process Planning
- CAX technologies
- Computer Aided Productions Technologies
- Design and manufacturing of welding constructions
- Dissertation Project
- Equipment for foundry and metal casting
- Experimental Methods in Forming
- Experimental Methods in Machining
- Final project
- Finishing Methods of Machining
- Flat Forming
- Flexible Production Lines for Forming Process
- Forming Machines
- Forming Process Automation
- Forming Tools
- Foundry technology
- Geometrical Product Specification
- Graduate project
- Graduate thesis
- Computer Aided Technology in Welding
- Inspection in welding
- Machine Tools and Fixtures
- Machines and Tools for Forming
- Machining and Forming Theory
- Machining Technology and Assembly
- Machining Theory
- Maintenance and renovation
- Measuring and Control Parameters of Products
- Mechanization and Automation in Machining
- Metrology
- Metrology and CAQ systems
- Opening Computer aided of production technologies
- Optimization of Forming Processes
- Optimization of Forming Processes for Small-Lot Production
- Paedeutical Activity
- Performance of production systems
- Planning of welding manufacture
- Practice
- Production Process Planning
- Programming NC machines
- Progressive Machining Methods
- Progressive Methods of Assembly
- Projecting of Forming Tools by Computer
- Projecting of production processes and systems
- Projecting of production systems
- Quality control and casting defects
- Quality control of weld joints
- Research Work
- Selected Clauses from Theory and technologies casting
- Selected Clauses from Theory and

- technologies forming
- Selected Clauses from Theory and technologies machining, metrology and assembly
- Selected Clauses from Theory and technology of welding
- Semester Project
- Simulation of Forming Processes
- Soldering and brazing
- Special Technologies of artistic castings production
- Special Technologies of casting
- Special welding methods
- Technical Preparation of Production in Machining and Forming
- Technical Preparation of Production in Welding and Casting
- Technological Design
- Technological Process Modelling and Simulation
- Technologies of Special Cast Iron Preparation
- Technology of Forming
- Technology of powder metallurgy
- Theory of Forming
- Theory of Foundry Technology
- Theory of Welding
- Tribology
- Volume Forming
- Welding Machines and Equipment
- Welding Technology

## GRADUATE THESES

### Bachelor Theses

#### Allina, M.:

Possibilities of utilization of PowerShape and PowerMill programs at creation of design and manufacturing of shaped surfaces

#### Babic, D.:

Cutting conditions and tools for machining composite materials

#### Babis, P.:

Cutting conditions and tools for precise hole drilling in composite materials

#### Babulík, A.:

Design and manufacture of an eject lift device

#### Bočko, T.:

Impact of cooling medium on deformation of thin-walled part

#### Bogár, D.:

Environmental and human aspects of technology when producing components by machining

#### Brtáň, R.:

Design and Manufacture of hobber for the shackle of a disc brake

#### Bučko, A.:

New materials used in automotive industry

#### Bučko, M.:

Production and modification of pressing tools by mechanical working

#### Bukovič, L.:

Influence of technology of pulling tubes on mechanical characteristics of tubes

#### Bunčák, V.:

Arc Welding of duplex stainless steels

#### Cíbil, D.:

Proposition of the assembly modeling railway wagon

#### Cintavý, J.:

Analysis of forming processes in unstable setting

#### Čapkovič, J.:

Design of gating system for figural sculpture

#### Černý, M.:

Design of assembly turbocharger

#### Číef, M.:

Machining driving sections of railway wheelsets

#### Doboš, D.:

Garage installation system scheme

#### Drienik, J.:

Theoretical patterns of the high speed milling

#### Drlička, R.:

Welding of selected non-ferrous metals and alloys by laser beam

#### Drobný, M.:

Parametric modeling sheet metals and assemblies

#### Đuriš, J.:

Exploiting laser and laser technics in metrology

#### Dvorák, M.:

Machines and devices used for wire production

#### Fišerová, M.:

Manufacture of gear wheels in the firm ZF SACHS Slovakia, joint stock company

#### Frankovič, J.:

Production of shank type tools by grinding

#### Fúri, V.:

Delamination vs. tool wear at drilling composite materials

#### Gajdošík, M.:

Cutting forces in milling

#### Gašpárek, J.:

Rationalization of turning of ball grooves for a double-row bearing in conditions of PSL a.s.

#### Gazárek, V.:

3D evaluation of surface roughness

#### Gergely, M.:

Theoretical analysis of deep drawing process

#### Glasnák, M.:

Compressibility of steel sheets with high strength properties

#### Gombár, R.:

Selection of CAM strategies in component surface's milling process

#### Gregor, P.:

Application of electro-erosion cutting for an extrusion device

#### Harárová, A.:

Design and manufacturing of a simplified bicycle model

#### Hetešová, A.:

Audiovisual tools for teaching of software DELCAM ArtCAM Pro

#### Hevier, J.:

Modeling selected machine

#### Holásek, J.:

Evaluation of selected parameters of roughness on the surfaces after roughing operations

#### Horváth, M.:

Unconventional methods of extrusion

#### Horváth, T.:

Design and manufacturing of a hockey helmet

#### Hovančák, D.:

Tension reducing in welded joints of constructions

#### Hožváková, Z.:

Modern trends in construction of CNC machine tools

#### Hrbatý, L.:

The eligibility of the wire processing when pulling under cold

#### Hrebíková, M.:

Design and manufacture of a screw tap for central bicycle assembly

#### Husár, A.:

Design of the assembly hand pump

#### Chudý, J.:

The analysis of abrasive wear mechanisms

#### Jaček, I.:

3D animation for teaching

#### Jagerčík, M.:

The use of computer technology in centrifugal casting simulation

#### Jamrich, K.:

A draft replica of an antique commode and the design and manufacture using CAD/CAM software

#### Jána, M.:

Bonding components of solar collectors

#### Jókay, J.:

Effect of control on life of cutting fluids

#### Juriga, J.:

Comparison of components produced by casting and forming

#### Kalný, L.:

Assembly process of a clutch for a pass car

#### Katrušák, R.:

High performance arc welding technologies and their application in practice

#### Kissová, T.:

Decreasing carcinogenic gas emissions in a foundry by using ecological binders

#### Klenko, M.:

Design and assembly of a battery drill

#### Klus, M.:

Electron Beam Welding of High-alloy Steel to Copper

#### Knizner, M.:

Machine tools for high speed milling

#### Kolenič, A.:

Renovation of pressing forms for production of building components

#### Komáromy, E.:

Ultrasonic machining

#### Kopáčik, P.:

Brazing Al and its alloys

#### Kösegi, T.:

Utilisation of TRITOP system in Thin walled part deformation monitoring

#### Kostelanský, F.:

Rationalization of holding hole drilling of bearing rings in PSL conditions, Inc Považská Bystrica

#### Kostelný, M.:

Comparison of manufacturable shape products with different production Technologies

#### Kováčsová, V.:

Materials of electrodes for resistance welding

#### Kovačič, L.:

The classification methods of grinding

#### Kováčik, M.:

Overview methods of the final finishing castings

#### Kovařík, V.:

Planning and production of a single-stage gearbox

#### Krajčí, M.:

Use of hand and automated assembly stations

#### Krajčovič, J.:

Computer aided process planning

#### Krajčovič, T.:

Explosion Welding

#### Královič, P.:

Influence of CAM Strategies on Mill Surface Roughness

#### Kráľovičová, K.:

Draft model of an artificial hip joint

**Kršková, L.:**

Roughness comparison of machined surfaces after water jet and laser cutting

**Kršteník, J.:**

System Banc de Parallélisme – polyvalent like the final part of car assembly in PSA Peugeot Citroen Trnava

**Kubošek, M.:**

Combined methods of machining

**Kudlej, M.:**

The Evaluation of formality of some metals by means of help of the computer

**Kuruc, M.:**

Cutting tools and materials for high speed cutting

**Leškanič, M.:**

Study of intermetallic phases creation on lead-free solder – substrate interface

**Longauer, J.:**

Overview of forming technologies, their development and application

**Madro, I.:**

Tribological equipments for wear testing

**Martinka, D.:**

Rationalization of large diameter bearings assembly in PSL a.s., Považská Bystrica

**Matula, P.:**

Technologies of the finishing of revolution surfaces

**Matušík, J.:**

Computer aided design and manufacturing of dental reparations

**Mečiar, E.:**

The repair of the pressure unit failures of the steam boiler in the conditions of power plant Nováky

**Mihalik, P.:**

Exploiting software about machining component

**Michálek, V.:**

Software equipment of Coordinate Measuring Machines and 3D optical measuring devices

**Michalík, J.:**

The roundness deviation measuring – video

**Miklovič, V.:**

Measurement methods of circular profile and their evaluation

**Miklušáková, J.:**

Advanced measurement methods in engineering metrology

**Mitriková, L.:**

The actual development of plastics and plastics processing technology

**Mucska, D.:**

CAM software comparison through manufacturing of contoured surface

**Orihel, M.:**

Design in term of assembly (DFA method)

**Pankúch, P.:**

The use of magnetic materials produced by the methods PM

**Pauer, A.:**

Steel machining with high solidity and hardness

**Paulínyová, Z.:**

More eco-efficient foundry production

**Pavelka, T.:**

Effect of lubricant on the process of cold wire drawing

**Pikna, D.:**

Gasket manufacturing with using of computer support

**Počarovský, L.:**

Technological possibilities of CNC turning centers in the company IMC Slovakia

**Polakovič, R.:**

Welding of aluminum and his alloys in the manufacturing process

**Poliak, J.:**

Machining with the support of ultrasound

**Porubský, P.:**

Tracking changes in the profile of the workpiece after centerless grinding

**Prach, M.:**

Lead-free soldering with additive of rare earth elements

**Práznovský, E.:**

Modeling of circular profiled workpiece

**Pšenko, M.:**

Coordination of measuring machines

**Púchly, M.:**

Tolerance and matching database

**Pukanec, J.:**

Recency of bevel gear production using precise forging

**Rácz, P.:**

Indirect methods of measuring external angles

**Radošický, B.:**

Tool wear of cutting tools at drilling composite materials

**Ragula, M.:**

Design and selection of cutting parameters for the production of mould

**Rehák, M.:**

Design of Medals for FMST with applying Delcam ArtCAM software

**Rusnáková, M.:**

Testing of grinding tools

**Sadovský, G.:**

Spark machining processes

**Sebiň, M.:**

Evaluation of the surface buckling in 2D

**Sekera, J.:**

Strategies of introduction of information system from the company's contribution point of view

**Schanz, T.:**

Effect of separation emulsions for welding spatters

**Schmidt, R.:**

Computer aided monitoring of cutting fluids

**Schottert, T.:**

Adaptive control of CNC machines

**Sobota, V.:**

Testing mechanical properties of steel wire

**Stojka, R.:**

Application of resistance welding in automotive industry

**Strečanský, L.:**

Software for learning to read-out spiral microscope

**Struška, B.:**

The suggestion for checking of connecting material in the company Würth International Trading Ltd.

**Suchý, M.:**

Suggestion for special methods of joining Al to CrNi austenitic steel

**Surový, R.:**

Comparison of CNC lathe components and the lathe with for spindle

**Šantavý, D.:**

Tailored Blanks technology and its applications in the automotive industry

**Šárközi, M.:**

Electrical contact materials

**Šimončíč, D.:**

Measured deviation of straightness of a two-point bridge

**Šipkovský, M.:**

Qualification and certification of NDT in the welding process

**Škojec, M.:**

Working with the basic measure - the video

**Šoka, M.:**

Dry wire drawing

**Takács, A.:**

New resources in microscoping for measuring surfaces

**Tejbus, M.:**

Measurement of deformation of thin-walled parts

**Tomaníček, V.:**

Modification of post-processors for PowerMill program

**Tóth, L.:**

Design and production of models turning blades as teaching aids

**Tužinská, M.:**

Casting restrictions manufacturable persisted in mould casting

**Urban, P.:**

Selection of Technology for Surfacing Working Surfaces of Agricultural Machines

**Uriča, M.:**

Renovation of Castings Made of Mg Alloy type AZ

**Vagovský, J.:**

Effect of cutting material for the quality of machined surface

**Varga, E.:**

The classification of superfinishing methods

**Varga, R.:**

Design of technologic plan for machining supported by ultrasound

**Váry, G.:**

Development engineering in ZF SACHS Slovakia, a. s. Trnava Company

**Venény, P.:**

Workability examination of materials

**Vičíková, D.:**

Testing of the cutting tools with geometrically defined cutting wedge

**Volek, J.:**

Lathe work with a round cutting plate

**Vopát, T.:**

Complex turned parts

**Vozár, P.:**

Opportunities of a low-cost 3D scanner

**Závodný, M.:**

Parametric modeling and associativity

**Zeliska, I.:**

Strategy of milling

**Zigo, J.:**

Mould production by high-speed machining HSM

**Žažo, M.:**

Usage of the simulation programs MSC.SuperForge

**Masters Theses****Bachratý, M.:**

Production Proposal of Dental Mirror Shell

**Bajkai, P.:**

Explosion welding of malleable cast iron to chosen type of bronze

**Barč, M.:**

3D animation of chosen progressive methods of machining

**Bartoš, R.:**

The comparison of two-factor classical and planned experiments

**Beták, M.:**

Latest trends in lubricating and surface treatments for wire drawing

**Bodišová, P.:**

Proposal for the use of CAD/CAM system for machining technology

**Bolečková, M.:**

Using of the Delta Spot for resistance welding of aluminium and high strength steels

**Boris, J.:**

Optimization of the cutting parameters of plasma separation of the construction steels

**Borza, B.:**

The geometrical cross-sectional shape changes in the sphere of tubes bending in cold conditions

**Božik, S.:**

Problem of weldability of high strength structural steels S690QL and S960QL by productive methods of fusion welding

**Brecko, T.:**

Suitability of milling strategies for various types of surfaces

**Buday, M.:**

I shaped iron welding by MIG/MAG method with four torches together

**Bugár, K.:**

Repair and Optimization by Welding Process of the reactor and regenerator

**Buchanec, I.:**

Lathe-turning of a metric thread by using side feed

**Bulant, P.:**

Analysis of the impact of thermal cycling on the growth of intermetallic phases in the solder joints

**Cibulková, S.:**

Detecting the development of the surface roughness in relation to the cutting velocity in turning

**Černáková, K.:**

Reduction of end thin-walled tubes

**Čižmárik, R.:**

The design assembly of the pressing container by the company UT Umwelt und Transporttechnik s.r.o.

**Daniš, J.:**

Rationalization of production parts machining in the ZF SACHS Levice

**Danko, D.:**

Research of plasticity and bulk formability of the aluminium alloy under higher temperatures

**Demian, P.:**

The proposal of technology forging die forging pieces in the shape of fork, using computer simulation

**Drozda, M.:**

Using of generative approach of computer-aided process planning

**Duračka, A.:**

Problems with application of lead-free solders in company Delipro Piešťany

**Dvoráková, L.:**

Influence of lubricant and copper powder addition to ferrous powder on its compressibility

**Fabuš, M.:**

Effect of additive components on the structure and properties of zinc alloys cast with method TEKCAST

**Farkaš, P.:**

Welding of TRIP Steel by Pulsed Nd:YAG Laser

**Filip, M.:**

Welding of brass pulse Nd:YAG laser

**Fischer, T.:**

Exploitation of 3D Laser scanning for the purpose of decommissioning

**Forro, R.:**

Rationalization for any choosed technological operations at INA SKALICA Ltd

**Freňák, P.:**

Editing the cutting parameters for milling copiers

**Gálovič, R.:**

The impact of wire straightening and its mechanical qualities

**Gápliovská, M.:**

Contribution to the Theory of copying milling

**Gejdoš, K.:**

Rationalization of coupling towbars utilizing material cutting by laser beam

**Gubriansky, E.:**

3D animations for chosen cutting geometries

**Gudabová, P.:**

Study of relation between decrease rate of surface roughness and value of material decrease during metal polishing by plasma discharge in electrolyte

**Guldan, P.:**

Welding of aluminium alloy by laser beam at AUDI Q7 automobile bodywork, an influence of welding gap for quality of welding joints

**Haršányi, O.:**

Design and manufacture of electric guitar

**Hasiček, S.:**

Welding of nitrooxidation treated steel sheets by solid state laser

**Hegedús, K.:**

Gauges database

**Hrčka, M.:**

The strengthening of components and instruments by surface plastic deformation

**Hrušovská, D.:**

Experimental analysis of surface properties of moldings made by metal spinning technology

**Hudec, J.:**

The use of power ultrasound in the soldering of ceramic and metal materials

**Hulej, M.:**

Deformation conditions of material after metal spinning operations

**Chachula, M.:**

Valuation to the structure Solders BiAg11

**Chocholáček, J.:**

Determination of cutting temperature by a planned experiment in turning

**Chovanec, M.:**

Options production for a bottle using multi-axis machining

**Jadrný, R.:**

Finishing methods of machining based on the pressure plastics deformation

**Jakubička, P.:**

Theoretical- technological analysis of production processes of extract with flange

**Jančár, J.:**

Effect of thermal cycling on shear strength of joints made with lead-free solders

**Jasenský, M.:**

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**Stemmer, R.:**

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Parts classification from view of CNC machining

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The manufacturing of the component by CNC milling machine in conditions of Šmeral Brno inc.

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The inventions and patents in metalworking

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Proposal of Classification of technological forming processes

**Tarčáková, M.:**

Present and current trends of energy saving in die forging

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Compaction of steel wire drawn through die

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Proposal of technological processes with computer support

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Evaluation of form accuracy of products made from metal plates, using 3D contactless scan

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The influence of technological parameters at the quality of frame spurt

**Trnková, L.:**

Investigation of influence of current density to the value of decrease of material under the metal polishing by plasma discharge in electrolyte

**Vajda, M.:**

Monitoring the qualities of cutting fluids

**Vajová, K.:**

Analyses of the working environment negative factors in the die forges

**Valent, P.:**

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**Vaňa, D.:**

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The use of lasers in engineering technology

**Viselka, A.:**

Inventions and patents in the assembly

**Voznický, M.:**

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**Zelnerová, L.:**

A proposal for humanization of the production process in MATEP BA, spol. s r.o.

**PhD Thesis**
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**Bárta, J.:**

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**Benák, M.:**

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**Buranský, I.:**

Machining thin-walled parts

**Eleková, L.:**

Mathematical expression of the material ratio curve of the profile

**Kucháriková, E.:**

Monitoring of cutting fluids

**Líška, J.:**

Machining of Composite Materials

**Lišková, J.:**

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**Ridzoň, M.:**

Research on technological parameters affecting the production and properties of steel pipes

**Siketová, K.:**

Influence of CAM strategies on the dimension and shape accuracy of shaped surfaces

**Šimek, M.:**

Study of properties of selected welding joints and clads created by laser with welding material in the form of wire

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INSTITUTE  
OF PRODUCTION  
SYSTEMS  
AND APPLIED  
MECHANICS





# INSTITUTE OF PRODUCTION SYSTEMS AND APPLIED MECHANICS

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## Institute Departments

- Department of Applied Mechanics
- Department of Technological Devices and Systems

## Staff

- Professors: 2
- Assoc. Professors: 6
- Senior Lecturers: 14
- Research Fellows: 3
- PhD Students: 6

## Study programmes

- Production Devices and Systems

## Research objectives

- intelligent workpiece clamping
- intelligent assembly
- thematic network on manufacturing technologies
- new concept of integrated multifunction manufacturing system
- modeling, 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 for bachelor, master and PhD. degrees. The research activities of the institute are aimed at the solution of up-to-date problems and tasks from the field of production systems and devices, applied mechanics, thermodynamics, heat transfer and numerical modeling 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,
- Modeling, analyses and simulations of mechanical systems and machine aggregates,
- Mechatronical principle application to production devices,
- Methods of diagnostics and identification,
- Mechanical systems reliability,
- Vibrations, acoustics and biomechanics,
- Determination of cooling characteristics for heat treating mediums,
- Mechanical, thermal, fluid and other analyses for mechanical parts of machine and skeletons,
- Modeling, numerical simulations, analyses and optimisation for processes of forming, welding, founding and heat treatment.

At the Institute, the following laboratories are established at this time: Laboratory of robotics, Virtual laboratory of pneumatics and electro-pneumatics systems, Laboratory of pneumatics, FESTO laboratory, Laboratory of CAD systems, Laboratory of machine mechanics, Laboratory of tribology, Laboratory of thermodynamics and mechanics of fluids, Laboratory of numerical analyses, Laboratory of modeling, Laboratory for vibration and acoustics research and also Mechanical workshop.

In the framework of cooperation between research and praxis, the institute cooperates with several industrial enterprises and research centers (FESTO spol. s r.o. Bratislava; SMC Priemyselna automatizacia spol. s r.o. Bratislava; ZF Sachs Slovakia, a.s. Trnava; TOMA INDUSTRIES spol. s r.o. Trnava; ŽOS, a.s. Trnava; INA Skalica, spol. s r.o. Skalica; VUJE, a.s. Trnava; EBO Slovenské elektrárne, a.s. Jaslovské Bohunice; JAVYS, a.s. Jaslovské Bohunice; AllDeco, spol. s r.o. Jaslovské Bohunice) and with institutes of the Slovak Academy of Sciences.

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 Poznaň, VUT Brno, UTB Zlín, VŠB Ostrava, TU Brašov, TU Chemnitz, ZČU Plzeň, TU Iževsk, 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.

## PROJECT OF TECHNOLOGY TRANSFER

### Laboratory of flexible manufacturing systems with robotized manipulation supported by no- drawing production

The aim of the project is to create an elastic production system with robotic regulation which will enable design-free production. The product will be modeled with a PC in an appropriate 3D CAD program, then the regulation program will be generated and it will be started in an elastic production system which will produce a component. It will provide the possibility to produce the necessary components for a concrete product. All produced components will be controlled during production, so the likelihood of failure of finished products will be decreased. This prototype device will help to observe the influence of different production strategies on production costs, time, which is necessary to produce a certain product amount, and other important efficiency parameters of the production. The advantages of design-free production and influence on efficiency of the whole process will be observed and presented in pre-production and production phases.

## INTERNATIONAL PROJECT

### SK-HU-0011-08 (29.05.2009-31.12.2010)

Peter Košťál, Assoc. Prof. PhD.

#### Implementation of Production Logistics into Learning System

The field of production logistics, with many reserves hidden, presents a great opportunity for making the production logistics more effective. Logistic optimization in production implies a real global task. To solve this task, there is a great worldwide effort mainly on the part of large-scale industrial concerns. This really means a matter of dedication. Solution of this problem needs specialists with professional competence in a broad extent concerning this field. Such specialists can manage the principles of production technology, production engineering, as well as production logistics within the sufficient range. Besides the management of the mentioned principles, they also need to be capable of useful exploitation within the design and creation of production systems, as well as already existing systems of operation.

### SK-CZ-0180-09 (01.01.2010-31.12.2011)

Mária Behúlová, Assoc. Prof. PhD.

#### Development of models for numerical simulation and optimization of

### processes of unconventional material processing in semi-solid state

The project is focused on the design, analysis and optimization of material processing in semi-solid state with the aim to obtain final products with very fine microstructures and unique material properties. The main aim of the project covers the attainment of experimental, model and simulation support for the design and optimization of forming processes in semi-solid state and their application for the production of small products from high-alloyed tool steels. The solution methodology will be based on the close coupling of up-to-date experimental and diagnostic methods with the advanced methods of mathematic modeling and numerical simulation of material behavior in semi-solid state. For this purpose, a unique technical, laboratory and software equipment of both workplaces will be exploited.

### AU-SK 2009-10-150001 (01.01.2010-31.12.2010)

Mária Behúlová, Assoc. Prof. PhD.

#### Computer Aided Design and Optimisation of Production Technologies

The main object of the project covers a very close coupling between advanced high-tech experimental measurements and computer aided design, numerical simulation and optimization of unconventional laser production technologies in the direct relationship to the practice. The principal effort will be focused on the introduction of efficient cooperation of academic institutions and small and medium enterprises in the regions of Trnava and Vienna. The final aim is the establishment of a wide platform for the permanent communication of industrial companies with researchers, teachers and students in order to increase their competitiveness through the solution of technological problems and dissemination of up-to-date scientific knowledge to practice.

## NATIONAL PROJECTS

### VEGA 1/0206/09 (01.01.2009- 31.12.2012)

Karol Velíšek, Professor, PhD.

#### Intelligent Assembly Cell

A flexible and intelligent assembly cell concept includes a new solution for how to create structures of assembly systems. No external industrial robot is used for manipulation or for assembly. Intelligent behaviour of the system will rely on monitoring of important parameters of the system and there will also be monitored information about the system's interaction with its surroundings. Surrounding interaction information will be taken with many advantages, such as bringing flexible reactions of the system to manufacturing changes, building up the area of saving, lowering building costs, and higher use effects of the whole device.

### VEGA 1/0163/10 (01.01.2010 – 31.12.2011)

Peter Košťál, Assoc. Prof. PhD.

#### Clamping fixtures in intelligent production systems

A new generation of clamping fixtures presents systems of clamping fixtures that are ap-



plicable for use in intelligent production systems. A distinctive effect of incidental time reduction is possible to achieve by automated clamping and manipulating operations or by a defined degree of clamping fixture intelligence. It is also possible to achieve a relevant increase of production process effectivity in the present increase of process quality by use of fixture clamping.

**KEGA 3/7131/09  
(01.01.2009- 31.12.2011)**

Peter Košťál, Assoc. Prof. PhD.

**Laboratory of Production System Program Control**

The Laboratory of Production Systems Program Control will be used for automated program control learning. In this laboratory real industrial parts for automation (PLC, sensors, stepper motors, servo motors and others) will be used. Students in this laboratory will learn about automation in the field of flexible production, and they will get new experiences about automated production works. They will get key competencies needed by industrial praxis from graduates of technical universities. In the frame of this project new studying materials about automated program control systems will be created.

**VEGA 1/0721/08  
(01.01.2008- 31.12.2010)**

Bohumil Taraba, Assoc. Prof. PhD.

**Quantification of Cooling Properties of Coolants in the Field of Heat Thermal Treatment Processes Supported by Computer Modeling Support of Dominantly Thermal Technological Processes.**

The project is oriented towards research on transfer phenomena in cooling of parts in chosen coolants used in industrial production. The aim is the quantification effect of coolants on vertical, horizontal and skewed parts surfaces. By experimental temperature measurement in the chosen point of the cooled part, and with numerical simulation support, it is possible to predict the combined heat transfer coefficient as a surface temperature function, momentary heat fluxes from the cooled surface, and cooling rates.

**VEGA 1/0832/08  
(01.01.2008- 31.12.2010)**

Helena Kraváriková, PhD.

**Thermo-mechanical Analysis of the Welding Process using the Experimental and Modeling by the Finite Element Method**

Modeling and simulation of the melt welding process is very demanding work. This work requires experience and special knowledge of welding technology, heat transfer and exploitation of computer techniques. By appropriate application of these skills you can obtain solutions to specific problems in the field of welding processes, such as residual thermal stresses and deformations of welded materials or structural changes of phases in the heat affected zone (HAZ). Structure changes in the HAZ are caused by changed temperature as a result of introduced heat into weld. Structure changes in HAZ cause changes of mechanical properties of welded materials. The stress gradient is high in the

HAZ because of its thickness. Measurement of parameters obtained from experiments are used for verification of results achieved by FEM. The engineering-scientific software ANSYS is suitable for solving thermo-mechanical analysis of the welding process by FEM. Structural changes in HAZ could be satisfactorily solved by the software SYSWELD.

**VEGA 1/0090/08  
(01.01.2008- 31.12.2010)**

František Pecháček, Assoc. Prof. PhD.

**Optimized Systems and Processes of Performance Ultrasound**

The project is basic research oriented to ultrasonic tool resonators for technology applications of ultrasound. Amplitude and frequency parameters of ultrasonic piezoelectric convertors, wave conductors, concentrators and tools are being analysed.

**VEGA 1/0837/08  
(01.01.2008- 31.12.2010)**

Mária Behúlová, Assoc. Prof. PhD.

**Design and Optimisation of Innovative Forming and Heat Treatment Technologies Supported by FEM Simulation**

The project is focused on the application of advanced approaches to the design, analysis and optimisation of chosen innovative forming processes, including incremental deformations in order to achieve final products with very fine microstructures and specific material properties. From the theoretical point of view, the project should contribute to an advance in knowledge in the field of material behavior under conditions of intensive deformations, to the explanation of physical and metallurgical reasons of microstructure development in the processes of incremental forming and their influence on the material, technological and utility properties of chosen materials. Further, the attention will be aimed at the study of rapid solidification processes during thixoforming. The objective of the project also creates the development, verification and application of new simulation models, material models and computing procedures for numerical simulation of forming and heat treatment processes.

**VEGA 1/0256/09 (01.01.2009-31.12.2011)**

Milan Nad', Assoc. Prof. PhD.

**Experimental and Simulation Methods of Dynamical Analysis of Mechatronic Subsystems of Technological Equipments**

A mechatronical approach to modelling, analysis, and design of effective modern technological equipment is forced by the inevitable mutual integration of mechanical, electrical, electronic and control subsystems, as well as by their integration with the terminal technological process. This type of integration calls for development of methods for analysis and synthesis of energetic and information flow among subsystems with regard to efficient satisfaction of the functional objectives of the complete technological system.

**LIST OF SUBJECTS GUARANTEED BY THE INSTITUTE**

- Applied Mechanics
- Assembly Machines
- Bachelor Project
- Bachelor Thesis
- Computer Aided Design I, II, III
- Cutting Tools
- Digital signal processing
- Design of Production Systems
- Diploma Project
- Diploma Thesis
- Elasticity, Strength and Plasticity
- Experimental methods and technical diagnostics
- Finite Element Method
- Fundamentals of Engineering Design and Technical Documentation
- Fundamentals of Mechatronics
- Introduction to finite element method
- Graduation Project
- Industrial Robots and Manipulators
- Logistics of Production Systems
- Machine Parts and Mechanisms
- Machine Tools
- Machines for Special Technologies
- Maintenance of production systems
- Mechanics of Fluids and Thermomechanics
- Mechanics of Materials I
- Mechanics of Production Machines
- Mechanics I
- Mechanisation and Automation
- Mechatronics
- Modeling and Simulation of Technological Processes
- Modelling of thermal processes
- Noise and Vibration
- Operation and Maintenance of Production
- Technique/Devices
- Performance of Production Systems
- Practice
- Production Devices
- Production Process Planning I, II
- Production Systems I, II
- Programming of Production and Manipulating Devices
- Reliability and Safety of Technical Systems
- Solid Mechanics
- Technological Equipment of Production Machines
- Technological Process Modelling and Simulation
- Theory of Automatic Machines
- Vibration of mechanical systems

**GRADUATE THESES**

**Bachelor Theses**

- Babiak, M.:**  
Changing and getting effective command program for tools
- Baránek, J.:**  
Draft e-learning module for the classification of turns
- Baumgartner, M.:**  
Controlling a pneumatic circuit of the production equipment
- Belai, R.:**  
The Selection of Solutions for Distribution and Assembly of Engines in PSA Peugeot Citroen, Trnava

**Boris, M.:**  
Modernization of gauge strain apparatus M2000

**Bučeková, K.:**  
Scheme of e-learning module for tolerance of dimensional accuracy

**Fitoš, P.:**  
The project of compressed air production in an E-learning module

**Gašparovič, P.:**  
Analysis of the influence of bearings parameters on the dynamic rotor characteristics

**Hlavka, S.:**  
The front suspension sector assembly implementation to the Vehicle front-end assembly line in the Peugeot Citroen Automobiles Slovakia, Trnava plant

**Hrebíček, P.:**  
Modern concepts of establishing the effective operation of productive systems

**Hrebík, M.:**  
Virtual model of a humanoid robot Bioloid

**Hyroš, M.:**  
Proposal of utilization PPS systems on assembling operation in electrotechnical industry

**Chlapečka, R.:**  
Methodical approach of creation connecting pneumatic circumference

**Janota, J.:**  
The analysis of production systems in modernization of Bdt carriages in ŽOS Trnava, a.s.

**Krejčí, P.:**  
Proposal of a production system dispositional solution by means of material flow analysis

**Kšinantová, T.:**  
The Design of an E-learning Module for Classification of screws

**Kubala, I.:**  
Suggestion about pneumatic control for selected manipulator

**Laňčarič, A.:**  
Ideological device of handling equipment for the production of controllers

**Melovič, F.:**  
An idea for a proposal of jaws of clamp caps for non-rotated parts

**Miklošovič, L.:**  
Stochastic modeling of reliability of manufacturing systems using the Monte Carlo method

**Mišovič, P.:**  
Proposal for an e-learning module to characterize surface roughness

**Nádaský, D.:**  
PPS systems use proposal at chosen packing facility of chemical industry

**Novák, S.:**  
Valves and distributors in technical practice

**Popovič, I.:**  
Design of an E-learning Module for Classification of Nuts

**Rakús, P.:**  
Database of transport systems in production process

**Rolník, L.:**  
Designing the deformation element of a sensor for multiaxial measuring

**Slamka, Š.:**  
The proposal of an e-learning module for classification of technical materials

**Sokól, J.:**  
An algorithm for recognition of obstacles to movement of a humanoid robot

**Šafranek, M.:**  
Proposal of gripper jaws for gripping complex shaped components

**Šimúnová, M.:**  
Methods for reduction of unwanted vibrations of elements of production systems

**Švoš, J.:**  
Vibrating Conveyors in Technical Practice

**Topolský, L.:**  
The project on the e-learning module for the classifying of pins, plugs, wedges and springs

**Vilím, A.:**  
The meaning of total productive maintenance regarding lifetime and performance of production machinery in PSA Peugeot Citroën Slovakia

**Víttek, D.:**  
Solution selection of distribution and wheel assemblies in Peugeot Citroën Automobiles Slovakia, Trnava

**Vlček, P.:**  
Controlling the electro-pneumatic circuit of the production equipment

**Žák, K.:**  
The Implementation of a New Seats Supplier into an Existing Line

#### Masters Theses

**Bačo, M.:**  
Methodological procedure of making robotised assembly workstations

**Baranovič, M.:**  
The Design of the Material Flow Variants in a Flexible Manufacturing Cell

**Braníš, M.:**  
Welding robotization

**Cintula, Š.:**  
Backup systems in the reliability of technical systems

**Cintulová, M.:**  
The time proposal of the material flow in the production line depending on the production time of a particular product

**Daniš, J.:**  
Design of Triaxial Pneumatic "Pick and Place" Manipulator Workplace Dismantling Automation

**Dávidová, K.:**  
Equipment design orientation entered parts

**Drška, P.:**  
The computational model of flexible production line reliability

**Figura, L.:**  
Planning and projection warehouse system in the mechanical production

**Gyárfás, P.:**  
Rationalization of manufacturing system design through CA systems

**Hamar, B.:**  
Positioner for welding of mast section steel structure

**Horváth, M.:**  
Rationalization of production of plastic parts - optimizing of production equipments layout

**Kollár, A.:**  
Independent automatic machines set performance and reliability evaluation

**Kollárová, V.:**  
Algorithms for material flow in flexible production cell

**Kopka, R.:**  
Proposal of a production facility for manufacturing of specified component

**Krajčová, K.:**  
Methods of planning, optimization and running of material flow

**Laňčarič, I.:**  
A motion product base for the flexible manufacturing system

**Mikula, A.:**  
Algorithms for proposing a model production system

**Nguyenová, D.:**  
The submission of equipment for the assembly of reward component

**Omelka, T.:**  
A proposal of logistics flow of material in flexible production cell from warehouse system point of view

**Peško, M.:**  
Design of technological exhaust system in manufacturing hall

**Petráš, M.:**  
Choice of suitable equipment for writing Cartesian robot activity principle in a flexible production at UVSM

**Pleva, P.:**  
Rationalization of the production of plastic components - optimization of material reserves in production

**Podmajerský, I.:**  
Creation of technical documentation for a specific part of managing the flexible manufacturing cell line

**Pompura, M.:**  
Model design of production system

**Procházka, P.:**  
Proposal of the production line for synchronous bearings in terms of INA SKALICA

**Szabo, Z.:**  
Shape design of the die cavity for material forming in semi-solid state

**Šebeňová, S.:**  
The equipment design for material flow in manufacturing entered element

**Špetta, I.:**  
Application of system KAIZEN on optimize of assembly line combined radially and axial bearings in INA Skalica

**Špettová, R.:**  
Proposal for a sensor system for identification of single objects in the work area of intelligent production-assembly cell on UVSM

**Šuhajda, P.:**  
The design of evaluation methodology and rationalization of workplaces

**Tuchyňa, V.:**  
Physical data for mathematical modeling and simulation of pneumatic systems

**Tulala, D.:**  
Design of automatization of three-axial pneumatic Pick&Place manipulator assembly Workstation

**Víttek, M.:**  
The option of suitable means for writing the principle of activity of the storage system in an intelligent manufacturing and assembly cell on UVSM

**Žilinská, S.:**  
Equipment design for automated assembly

**Žilinský, B.:**  
Complete system design of the electropneumatic control of main tractive circuits and brakes in cooperation with the system ARR of two-system railway engine

**Žilinský, D.:**  
Equipment design for automated disassembly

## PhD Thesis

### Đuriš, Rastislav:

Solving Non-linear problems with full-matrix stiffness

## VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

Behúlová Mária, Assoc. Prof. PhD.

*Czech Republic*

Velíšek Karol, Professor, PhD.

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*Austria*

Košťál Peter, Assoc. Prof. PhD.

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Đuriš Rastislav, PhD.

*France*

Holubek Radovan, MSc. Eng.

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Ružarovský Roman, PhD.

*Romania*

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Velíšek Karol, Professor, PhD.

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Košťál Peter, Assoc. Prof. PhD.

*Hungary*

## MEMBERSHIP IN SLOVAK PROFESSIONAL ORGANISATIONS

### Slovak Acoustical Society

Tibor Nánasi, PhD.

Milan Nad', Assoc. Prof. PhD.

### Slovak Welding Society

Helena Kraváriková, PhD.

### Technical Commission 21 SÚTN Bratislava

Tibor Nánasi, PhD.

Milan Nad', Assoc. Prof. PhD.

### Slovak Associations of Mechanical Engineers

Karol Velíšek, Professor, PhD.

Peter Košťál, Assoc. Prof. PhD.

František Pecháček, Assoc. Prof. PhD.

### Technical Commission 68

#### SÚTN Bratislava

Milan Nad', Assoc. Prof. PhD.

### Expert Group for Chemistry and Physics of Solids

Mária Behúlová, Assoc. Prof. PhD.

### Technical Commission 81

#### SÚTN Bratislava

Bohumil Taraba, Assoc. Prof. PhD.

### Technical Commission 57

#### SÚTN Bratislava

Bohumil Taraba, Assoc. Prof. PhD.

### Technical Commission 58

#### SÚTN Bratislava

Bohumil Taraba, Assoc. Prof. PhD.

## MEMBERSHIP IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

### Society of Machining and Machine Tools

Karol Velíšek, Professor, PhD.

Peter Košťál, Assoc. Prof. PhD.

František Pecháček, Assoc. Prof. PhD.

Marcela Charbulová, PhD.

### OIAV - ÖSTERREICHISCHER INGENIEUR - UND ARCHITEKTEN – VEREIN

Karol Velíšek, Professor, PhD.

### The Czechoslovak Association for Crystal Growth

Mária Behúlová, Assoc. Prof. PhD.

### European Acoustical Association

Tibor Nánasi, PhD.

### IACSIT - International Association of Computer Science and Information Technology

Peter Košťál, Assoc. Prof. PhD.

Andrea Mudriková, PhD.

Mária Behúlová, Assoc. Prof. PhD.

### IIIS The International Institute of Informatics and Systemics

Nina Danišová, PhD.

### WASET - World Academy of Science, Engineering and Technology, Scientific and Technical Committees

Peter Košťál, Assoc. Prof. PhD.

## PUBLICATIONS

### Books

Košťál, Peter: Modular Production System Modeling. - 1st ed. - Köthen : Hochschule Anhalt, 2010. - 71 p. - ISBN 978-3-86011-037-9

Nad', Milan: Modification of Modal Characteristics of Vibrating Structural Elements. - 1st ed. - Köthen : Hochschule Anhalt, 2010. - 92 p. - (Scientific monographs). - ISBN 978-3-86011-029-4

Lacko, František - Oravcová, Jarmila - Riečičiarová, Eva: Introduction to construction and technical documentation. - Trnava : AlumniPress, 2010. - 199 p. - e-publication. - ISBN 978-80-8096-134-3

Matúšová, Miriam - Hrušková, Erika: Projects of production systems : Instructions for seminars. Trnava : AlumniPress, 2010. - 117 p. - e-publication. - ISBN 978-80-8096-116-9

### Journals

Behúlová, Mária - Mašek, B - Meyer, L.W.: Numerical simulation of induction heating of a rod semiproduct for the process of rotary spin extrusion. In: Kovové materiály. Metallic materials. - ISSN 0023-432X. - Vol. 48, Iss. 5 (2010), pp. 327-336

Adamčíková, Andrea - Taraba, Bohumil - Kováčik, J.: A Study of Porosity Influence on

- Thermal Diffusivity of Aluminium Foam by Experimental Analysis and Numerical Simulation. In: Diffusion and Defect Data. Pt A Defect and Diffusion Forum. - ISSN 1012-0386. - Vol. 297-301 (2010), pp. 814-819
- Danišová, Nina - Majerík, Jozef: Application of sequential diagram in the shelf storage system. In: Annals of Faculty of Engineering Hunedoara - Journal of Engineering. - ISSN 1584-2673. - Tom VIII, Fasc 3 (2010), pp. 358-360
- Danišová, Nina - Velíšek, Karol: Sensors application in the intelligent assembly and manufacturing systems. In: Machine Design. - ISSN 1821-1259. - 2010 (2010), pp. 221-224
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- Horváth, Štefan - Javorová, Angela: Planning and design production system organizational structures and procedures. In: Annals of Faculty of Engineering Hunedoara - Journal of Engineering. - ISSN 1584-2673. - Tom VIII, Fasc 3 (2010), pp. 331-335
- Hrušková, Erika - Holubek, Radovan: Increasing of effectiveness of manufacturing and directing technical level. In: Proceedings in Manufacturing Systems. - ISSN 2067-9238. - Vol. 5, No 4 (2010), pp. 203-208
- Hrušková, Erika - Velíšek, Karol: Intelligent assembly cell as combination of intelligence and assembly. In: Academic Journal of Manufacturing Engineering. - ISSN 1583-7904. - Vol. 8, Issue 3 (2010), pp. 43-48
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- Kiss, Imre - Košťál, Peter - Hartványi, Tamás - Németh, János - Kovács, György: Improving the quality in industrial areas with adapted methodology for a better enterprise data. In: Acta Technica Corviniensis - Bulletin of Engineering. - ISSN 2067-3809. - Tom III, Fasc 3 (2010), pp. 131-135
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- Majerík, Jozef - Danišová, Nina: Experimental testing methods of HARDOX 500 face milling by PRAMET 8230 carbide inserts. In: Annals of Faculty of Engineering Hunedoara - Journal of Engineering. - ISSN 1584-2673. - Tom VIII, Fasc 3 (2010), pp. 263-266
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- Matúšová, Miriam - Javorová, Angela: Material flow analysis of designed flexible manufacturing cell (FMS). In: Proceedings in Manufacturing Systems. - ISSN 2067-9238. - Vol. 5, Special Number (2010), pp. 285-290
- Mudriková, Andrea - Košťál, Peter: Material flow in automated manufacturing. In: Machine Design. - ISSN 1821-1259. - 2010 (2010), pp. 331-334
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- Nad', Milan: Ultrasonic horn design for ultrasonic machining technologies. In: Applied and Computational Mechanics. - ISSN 1802-680X. - Vol. 4, No 1 (2010), pp. 79-88
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- Oravcová, Jarmila - Matúšová, Miriam - Košťál, Peter: Design of industrial robot grippers. In: Proceedings in Manufacturing Systems. - ISSN 2067-9238. - Vol. 5, Special Number (2010), pp. 313-316
- Pecháček, František - Hrušková, Erika - Javorová, Angela: Ultrasound in machining. In: Proceedings in Manufacturing Systems. - ISSN 2067-9238. - Vol. 5, Special Number (2010), pp. 317-322
- Pecháček, František - Charbulová, Marcela - Javorová, Angela: Ultrasound systems in machining technologies. In: Machine Design. - ISSN 1821-1259. - 2010 (2010), pp. 225-228
- Pecháček, František - Javorová, Angela: Use of performance ultrasonic grinding of ceramics. In: Academic Journal of Manufacturing Engineering. - ISSN 1583-7904. - Vol. 8, Issue 3. - , 2010, pp. 76-81
- Taraba, Bohumil - Hajdu, Štefan: Contribution to the use of CAD/CAE software for solution of chosen forming technological process. In: Machine Design. - ISSN 1821-1259. - 2010 (2010), pp. 251-254
- Labašová, Eva - Chmelíková, Gabriela: Electronic presentations in education. In: Materials Science and Technology [online]. - ISSN 1335-9053. - Vol. 10, Nr. 4 (2010), pp. 31-36
- Majerík, Jozef - Danišová, Nina: Production of parts in one setup. In: Ai magazine. - ISSN 1337-7612. - Vol. 3, Nr. 1 (2010), pp. 32-33

## Conferences

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Behúlová, Mária - Babalová, Eva - Švrček, Daniel: FEM analysis of temperature fields in welding applying volume heat sources. In: KOD 2010 : Proceedings the 6th International Symposium about Forming and Design in Mechanical Engineering. 29-30 September 2010, Palic, Serbia. - Novi Sad : University of Novi Sad, 2010. - ISBN 978-86-7892-278-7. - pp. 79-84

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Danišová, Nina - Velíšek, Karol: Shelf storage system running at the intelligent manufacturing cell. In: ICMIE 2010 : International Conference on Manufacturing and Industrial Engineering. Amsterdam, The Netherlands, September 28-30, 2010. - Amsterdam : World Academy of Science, Engineering and technology, 2010

Demianová, Kristína - Behúlová, Mária - Sahul, Miroslav - Ondruška, Jozef - Turňa, Milan: Influence of operation frequency on the temperature distribution in materials during induction brazing. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 21, No 1. Annals of DAAAM for 2010 & Proceedings of the 21st International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions" 20-23rd October 2010,



Zadar, Croatia. - Vienna : DAAAM International Vienna, 2010. - ISBN 978-3-901509-73-5, pp. 1311-1312

Grgač, Peter - Kusý, Martin - Behúlová, Mária: Microstructures developed during rapid solidification of tool steels of ledeburite type. In: Comec 2010 : VI Conferencia Científica Internacional de Ingeniería Mecánica. 2 - 4 November 2010 Villa Clara, Cuba. - , 2010. - ISBN 978-959-250-602-2. - [9]

Hajdu, Štefan - Taraba, Bohumil: The numerical approach to the calculation of combined heat transfer coefficient for cooling probe immersed in agitated quenching oil. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 21, No 1. Annals of DAAAM for 2010 & Proceedings of the 21st International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions" 20-23rd October 2010, Zadar, Croatia. - Vienna : DAAAM International Vienna, 2010. - ISBN 978-3-901509-73-5, pp. 1141-1142

Holubek, Radovan - Vlášek, Matúš - Košťál, Peter: Clamping jaws with sensory equipment for intelligent fixture. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 21, No 1. Annals of DAAAM for 2010 & Proceedings of the 21st International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions" 20-23rd October 2010, Zadar, Croatia. - Vienna : DAAAM International Vienna, 2010. - ISBN 978-3-901509-73-5, pp. 1173-1174

Horváth, Štefan - Danišová, Nina - Velišek, Karol: PPS System as a management tool for modern manufacturing plant. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 21, No 1. Annals of DAAAM for 2010 & Proceedings of the 21st International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions" 20-23rd October 2010, Zadar, Croatia. - Vienna : DAAAM International Vienna, 2010. - ISBN 978-3-901509-73-5, pp. 0179-0180

Hrušková, Erika - Velišek, Karol - Charbulová, Marcela: Assembly cell design supported by computer. In: Comec 2010 : VI Conferencia Científica Internacional de Ingeniería Mecánica. 2 - 4 November 2010 Villa Clara, Cuba. - , 2010. - ISBN 978-959-250-602-2. - [7]

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**INSTITUTE  
OF INDUSTRIAL  
ENGINEERING,  
MANAGEMENT  
AND QUALITY**



# INSTITUTE OF INDUSTRIAL ENGINEERING, MANAGEMENT AND QUALITY

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## Staff

- Professors: 4
- Assoc. Professors: 13
- Senior Lecturers: 14
- Research Fellows: 4
- PhD Students: 84

## Study programmes

- Industrial Management
- Production Quality
- Production Quality Engineering

## Research targets

- Progressive approaches in the area of the organization management
- Corporate Culture
- Knowledge management
- Logistics and production management
- Quality management
- Product and processes certification
- Marketing
- Human resources management
- Development of managerial competencies
- Project management
- Ergonomics



## RESEARCH CHARACTERISTICS

**Concept and focus of the research activities:** Research and pedagogical projects within VEGA & KEGA grant agencies; International programmes and projects; Internally funded projects; Contractual research and development projects funded by business and industry

**Major fields of research:** Progressive approaches in the area of the organization management, Human resources management, Development of managerial competences, Knowledge management, Project management, Sustainable development, Ergonomics, Logistics, production, marketing, Quality management, Operations research, Corporate Social Responsibility.

## INTERNATIONAL PROJECTS

### ERDC (01.06.2008-30.05.2010)

Renata Nováková, Assoc. Prof. PhD.

#### Emergence of Research Driven Clusters in Central Europe

The project aims at supporting regional authorities and governments in convergence regions with know-how, methods and financial instruments necessary to create capacities for stimulation and emergence of research-driven clusters. This will lead to clustering research institutions, universities, R&D companies, SMEs, large companies and financial institutions (if appropriate) in the region.

#### South East Europe Transnational Cooperation Programme : "The international cooperation network of educational and research institution with subcontractors and other bodies active in Automotive Industry"

(1.12.2009-28.2.2012)

Project team: Miloš Čambál, Assoc. Prof. PhD., Dagmar Cagaňová, PhD., Miriam Šefčíková, PhD., Zdenka Gyurak-Bábel'ová, PhD., Zuzana Lenhardtová, PhD., Jana Šujanová, Assoc. Prof. PhD.

The Project brings together Universities, R&D institutions, SME support facilities from EU-15, NMS as well as IPA to prepare and create the first automotive network in South East Europe. The second level clustering activities proposed by the project are strictly oriented on the activities which are improving the innovation capacities in the region and improve technology and know-how transfer - improving the innovation circle. The project in the first stage analyses the cluster's development and best practices across the regions as well as creating the connection with other existing European activities in the automotive clustering. The project focuses highly towards producing concrete results and addresses the main challenges that are particularly specific for the SEE region, particularly the same across the whole EU territory.

During the project, activities which should promote the automotive industry and increase the cooperation between universities and SME's will be realized as well - one permanent exchange program will be carried out. The project will summarize the earned experi-

enced and know-how on the Common Methodology which will be elaborated close to the project closure to help in other regions and different industries in second level clustering focused on innovation.

**The following activities were organised in 2010 as a part of the project No. SEE/A/594/1.2/X with the name „International net of education and research organisations with suppliers and other organisations which are active in the automobile industry,” with the acronym AUTOCLUSTERS:**



**1.** Members of project team organised an educational seminar on the "Future of the automobile industry" during International doctoral seminar 2010 which was prepared by the Faculty of Materials Science and Technology from the 16th to the 19th of May 2010. The educational seminar provided space for presentation of project contributions, analysis of the contemporary situation in the automobile industry, as well as future expectations.



**2.** On the 23.8.2010 the Faculty of Materials Science and Technology organised the next educational seminar called "Innovative trends and main challenges of automobile industry in the South-East Europe." During this seminar speeches with the topics: "Strategy of company cooperation in the time of globalisation", "Global trends in the automobile industry", and "Innovative trends and main challenges of automobile industry in South-East Europe" were presented.



**3.** In August 2010 the partners of the project AutoclusterS were presented at the meetings in Albena on the Bulgarian coast of the Black Sea. The results of the third project period were analysed. Proposals of 11 small projects were discussed and considered. Project partners selected three from them and they considered their future process. The participants visited the company ZMDI – Varna during the summit. This company develops special chips for automobile electronics. Some new Bulgarian electric automobiles were presented; they were developed with the companies Kaproni - Kazanlak and Belchev Motors - Stara Zagora.





**4.** On the 19th through 22nd of September 2010 the International Conference IGIP-SEFI 2010 "Diversity unifies - Diversity in Engineering Education" took place in Trnava. Part of the international conference was also an exhibition with more than 300 participants and an educational seminar on the project AUTOCLUSTERS „Innovative trends and challenges in the South-East Europe“, which took place on 21.09.2010.



**5.** Team members of the project AUTOCLUSTERS visited the 5th meeting of project partners in Iasi (Romania) on 29–30.11.2010. The aim of the meeting was to form and support the creation of the first cooperative and innovative net for automobile industry in the region of South-East Europe. The project results on the contemporary status of the tasks and plans for 2011 were presented during the meeting. The team members presented a so-called "small innovative pilot project". The mentioned "small project" (or sub-project) is focused on analysis of infrastructure for electric vehicles in the region of South-East Europe with the aim to map and identify the potential of countries/regions of the project partners from the view of technical and physical infrastructure for electrical vehicles and from the research infrastructure perspective also for electric vehicles.



**6.** At the end of 2010 three seminars on the future of electric vehicles, batteries, problems with charging and infrastructure for electric vehicles were organised. The University of

Technology-Gabrovo prepared an exhibition on the same theme with more than 300 participants. In December the Romanian partners from Iasi organised a regular meeting of partners of the project AutoclusterS, where the results of the fourth period, together with small projects and possibilities to be a part of the 7th frame programme, were analysed.

**7th Framework Programme  
(01.01.2009 - 31.12.2011)**

**DIVERSITY. Improving the gender diversity of management in materials research institutions.**

Research team: Oliver Moravčík, Professor, PhD., Dagmar Cagánová, PhD., František Horňák, Assoc. Prof. PhD.

The project's objective is to identify policies and implementation activities to improve gender diversity of management in materials research institutions by: Strengthening the role of women scientists in decision making processes, Supporting and implementing a more transparent career appraisal system and stimulating the research environment in the spirit of the European Charter for Researchers and the Code of Conduct for Recruitment Enhancing solidarity and involvement of (male) decision-makers in promoting gender equality in scientific decision-making, Raising the awareness within the scientific community, in the general public and among policy-makers about gender and research. The DIVERSITY project is an international consortium of 14 partners from 11 European countries: Germany, Austria, Belgium, France, Spain, Italy, Sweden, Slovenia, UK, Slovakia, and Greece. Project "DIVERSITY" is a 36 month project funded by the European Union within the 7th Framework Programme

**National Projects**

**LPP-0384-09 (03.09.2009-31.08.2012)**

Peter Sakál, Professor, PhD.

**The concept of the HCS model 3E vs. the concept of the Corporate Social Responsibility (CSR)**

The aim of the mentioned project is to enlarge the results of the research project Number 019/2001: "Transforming Industry in Slovakia through Participatory Ergonomics" (financially supported by a common Slovak-American fund for research cooperation) and also of the project KEGA MŠ SR Number 3-3111-05. In these days the research continues in cooperation with the company CHIRANA PROGRESS, s.r.o. Piešťany in the area of permanent development (TUR) and Corporate Social Responsibility (CSR). The aim of this research is to contribute to the vision implementation of Agenda 21 and the Lisbon strategy, in particular the strategy for the parts TUR in conditions of research and pedagogical processes on the workplaces of FMST SUT Trnava.

**KEGA 144-039STU-4/2010**

Rudolf Rybanský, Assoc. Prof. PhD.

**Creation of teaching material of the secondary school subject "Security technology" with using of interactivity MM of education software and e-learning.**

The project is focused on creation of interactive multimedia teaching applications to in-

crease the level of the pedagogical process with necessary video sequences, pictures and other multimedia aspects of the subject Security technology. It is for students of the secondary schools with an identical specialisation. One more intensive, more efficient and rational perception of information in specific subjects enables presentation of multimedia in many forms (text, schemes, photographs, speech, animation, video, tests). Today it is very important to find the main idea and aim of a studied subject in a flow of information. Interactive multimedia and hypertext where students can enter are the correct tools to support studied information, easy search, testing and easy orientation in them.

**VEGA 1/0229/08**

**(01.01.2008- 31.12.2010)**

Iveta Paulová, Assoc. Prof. PhD.

**Perspectives of quality management development in accordance with requirements of the Slovak Republic's market**

The project is aimed to exploration and analysis of contemporary theoretical knowledge of quality management and expected trends of theory and practice requirements (requirements and needs of market). The elaboration of information and the results of the evaluation for the explored industry will be discussed on the basis of the analysis. The evaluation of process application is related to quality management in the explored branches of industrial practice, in comparison with requirements of individual models of the quality management system (ISO 9001:2000, TS 16 949, AQAP). Elaboration of proposals for process improvement in the areas where the biggest failures were discovered will also be completed. The output will be the elaboration of a system solving proposal for more effective requirements application in the area of quality management for requirements of plant practice.

**VEGA 1/0156/08**

**(01.01.2008- 31.12.2010)**

Andrea Holková, Assoc. Prof. PhD.

**Key manager competence in the range of specific functional management areas and their applicable development concept.**

The merit of the project is to justify the importance of management competencies in human resource management as a crucial factor of organization success and competitiveness. The project is focused on comparison of variable approaches to management competencies, their identification and key manager competency definitions. Identification and development of manager competencies is necessarily needed for key managerial high performance. The project is also focused on methods and techniques of manager competence evaluation, creation of competency models and selection of applicable methods for key manager competence development.

**VEGA 1/0491/09**

**(01.01.2009- 31.12.2011)**

Jana Šujanová, Assoc. Prof. PhD.

**Project Management Processes of Maturity Control as a Tool for the Improvement of Mechanical Engineering Enterprise Competitiveness**

Management is one of the most dynamically developing business disciplines. One of the outputs of this development is the growing number of international standards, along with methodologies and project management tools. Business practice has to face the problem of the effective implementation of those standards in their internal project management processes and more in the project quality control that should lead to the achievement of a higher project maturity level. A higher project management maturity level in business practice means achievement of the project goals with less resources, lower costs and shorter time. All this could not be accomplished without the proper tools. Therefore the objective of this project is to prepare a widely applicable reference manual and tool for the project management processes maturity control in Slovak mechanical engineering enterprises, with the aim of increasing their effectiveness and sustainable competitiveness.

## LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

- Accounting
- Bachelor Project
- Bachelor Thesis
- Basics of Ergonomy
- Basics of Quality Management
- Business Economy Basics
- Business Economy I, II
- Business Finances
- 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 Project
- Diploma Thesis
- Dissertation Thesis I, II, III, IV, V, VI
- Economy
- Economy of Non-metallic Materials Production
- Ergonomy
- Exact Methods in Managerial Decision making
- Financial and Investment Management
- Financial Management
- Human Resource Management
- Change Management
- Industrial and Intellectual Property of the Firm
- Information Management
- Information Technologies II
- Innovation Management
- Integrated Management
- Intercultural Management
- Labour Rationalization Basics
- Logistics
- Management
- Management Basics
- Management Information Systems
- Management of Investment Progresses
- Management of Projects
- Managerial Ethics
- Marketing
- Marketing Management

- Market Research and Monitoring of Customer Satisfaction
- 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
- Practice
- Production Management I, II
- Project Management
- Project of Conformity Assessment
- Project and Process Management in Quality Management
- Quality Audits
- Quality Management Systems
- Quality Management Case Studies
- Research Thesis I, II, III
- Semester Project III
- Standardization, Certification, Conformity Assessment
- Statistical Methods
- Statistical Methods of Quality Control
- Statistical Methods in Process Improvement
- Strategic Management
- Supply and Distribution Based Logistics
- Tax Management
- Tools and Techniques of Quality Management
- Total Quality Management

## GRADUATE THESES

### Bachelor Theses

#### Andel, L.:

Draft proposal for improvement of software support utilization in the management of the Matador Automotive, a.s. company in Dubnica nad Váhom

#### AulitISOVÁ, G.:

Scheme of Measures to Improve Marketing Mix Management in the Company AGADOS Slovakia, s.r.o.

#### Bachratá, K.:

Project arrangements of using environmental marking of products by ISO 14 020 in ZF SACHS Slovakia a. s. Trnava in context with strategy of CSR

#### Bachratá, M.:

A review of the use of statistical control in business practice

#### Bako, R.:

The suggestion of precautions to improve supplying in the Semecs, s. r. o. Vráble company

#### Baláž, I.:

Drafting staff motivation in a quality management company POSS - SLPC Ltd., Voderady

#### BalážOVÁ, E.:

The concept of solutions for improvement of using economic and non-economic motivation as a tool for increasing the labour productivity in GEFCO SLOVAKIA s.r.o.

#### Balco, M.:

The analysis of actual status of quality assurance in the automobile assembly process in Volkswagen Slovakia, a.s.

#### Bartal, M.:

Proposals for development of personable assumptions of the managers in industrial corporations in SR

#### Bartek, T.:

Proposal for rationalization of the production process

#### BartovIkovÁ, L.:

Analysis of Current State of the Measurement and Monitoring Process in the Company Streit Trnava, s.r.o.

#### Bat'kovÁ, M.:

Draft of measures for improvement of inventory management and warehouse management in the company ŽELOS, Ltd.

#### Báto, R.:

Measure of proposal for improvement of work motivation in production process in SUBTIL Slovakia, s.r.o.

#### BednÁrikovÁ, L.:

Proposal of measures to optimize the layout of assembly work in the company Schnellecke Slovakia s.r.o, Lozorno

#### BelavÁ, M.:

A Proposal of Work Motivation Improvement Measures in the Production Process of ŽOS Trnava, a.s.

#### BeňovÁ, N.:

Recommendation of a proposal for exercitation of teaching principles and organization in the management of industrial companies in Slovak republic

#### BinkovÁ, M.:

Proposal to streamline material handling company in Delta Electronics Slovakia, s.r.o. company Dubnica nad Váhom

#### Birsan, A.:

Methodical, organizational and educational safety from applications of analysis of variance in management of quality of a machine company

#### BittnerovÁ, M.:

A proposal for steps of ergonomic rationalization in a selected operation of company ISOVER, s.r.o. Trnava

#### BobulovÁ, L.:

Proposals for measures to improve financial stability Elektrokarbon, j.s.c. Topoľčany

#### Bognár, P.:

Proposed measures for the implementation of process management and establishment of programs to improve quality management system at the enterprise HYDRAULIKA DS, Ltd. Dunajská Streda

#### Boldiš, R.:

The research of the applications of marketing purchasing in companies which are based on quality management

#### BrachovÁ, D.:

The proposal of measures to improve Supply Chain Management in the company Unilever Slovensko spol. s r. o.

#### BrandiburovÁ, J.:

The system of education in the company improves the performance of employees in the company Sauer-Danfoss a.s. Bystrica

#### BrehovskÁ, M.:

The proposal of a measure for better usage of marketing communication in Continental Matador Rubber s.r.o.

#### BrinzovÁ, E.:

The concept of measures for ergonomic rationalization in selected business operations in Západoslovenská energetika, a. s. Bratislava

#### BrůhovÁ, A.:

Survey of application of statistical process control in selected organizations

#### BubánovÁ, A.:

The development of a proposal for application of some statistical methods in the

management of process quality in LCD TV production

**Bučko, J.:**

Proposal for adaptation of new recruits in Železničná spoločnosť Cargo Slovakia, a.s.

**Buch, M.:**

Draft recommendations for inclusion and adaptation of workers to job in company I.D.C. Holding, a.s.

**Bulut, I.:**

Draft measures to enhance work motivation in the production process in the company SlovZink, Inc.

**Cisárová, P.:**

Suggestion of processes to improve usage of the marketing mix in RENSTAV spol. s r.o.

**Cuninka, T.:**

Analysis and design options for the introduction of a system of corporate social responsibility in Swedwood Majcichov

**Čagánek, F.:**

Suggestion of measures for utilization of chosen marketing activities in the company CWS – boco s. r. o., Bratislava

**Čermanová, B.:**

The research of training in the application of quality management system and evaluating its effectiveness in selected organizations in Slovakia

**Čóriová, M.:**

The proposal of measures to improve the skill development of staff in terms of Faurecia Slovakia s.r.o.

**Čulen, P.:**

A review of the application of the partnership forms with suppliers in the selected organizations

**Ďaďová, I.:**

Proposals for improving the use of intranet services in management of the company Klauke Slovakia, Ltd. Dolný Kubín.

**Daxner, J.:**

The proposal of measures to streamline the management inventories of the company PIPECO SLOVAKIA, s. r. o., Brezno

**Dobrovodský, M.:**

The application of the system improvement for motivation of employees in ZF SACHS Slovakia, a. s.

**Dočkal, J.:**

The Proposal of Measures to Improve Process Management in HES – COMGEO spol. s r. o., Banská Bystrica

**Drienovská, E.:**

Application of acceptance inspection in business practice

**Drobný, J.:**

Proposal of screwing process improvement using Kaizen methodology in Sony Slovakia, Ltd.

**Ďurajka, L.:**

Draft measures to improve the system of further education of employees at PSL, a.s Považská Bystrica.

**Ďuriš, R.:**

A proposal to improve the use of marketing communication tools for a specific product of the company I.D.C. Holding, a.s.

**Dvorská, J.:**

Analysis of the transformation process in the block of cylinder of Sauer-Danfoss, Inc. Dubnica nad Vahom

**Fiala, L.:**

The proposal of improvements in logistics processes in the company Zentiva, a.s.

**Filip, P.:**

Analysis of current state of quality assurance in the bearings production process in company INA Skalica, Ltd

**Fuleková, S.:**

The creation, especially the improvement of organizational structures of management of industrial enterprises

**Gábrišová, V.:**

Proposal of measures to streamline processes of inventory management and stock control in the HYKEMONT Ltd. Company, Nové Zámky

**Gajarský, P.:**

Analysis of the current quality assurance in the production process in the company POSS – SLPC, s.r.o. Voderady

**Gála, M.:**

Proposal of measures to improve functioning of transport processes in company DUSLO, Inc.

**Galbičková, D.:**

Elaboration of system approach for improvement of the process of survey by management in the organization "Chladiace veže Bohunice, s.r.o."

**Gálová, A.:**

A proposal for measures to improve efficiency of supply and stock control management processes at enterprise Duslo, a.s. Šaľa

**Galovičová, D.:**

Proposition of measures and suggestions for better use of marketing mix in corporation CELOX

**Gašparovič, R.:**

Draft of measures to improve the current method of allocating and adaptability of employees to work positions in the company J&T REAL ESTATE, Inc.

**Gazdaricová, Z.:**

The Suggestions for System Improvement for Motivations of Kia Motors Slovakia, Ltd. Employees

**Gaži, M.:**

Proposal of measures to streamline production logistics in the company Leoni Autokabel Slovakia s r.o., Trenčín

**Geregová, J.:**

Draft measures to stabilize the staff

**Gerek, R.:**

Proposal of arrangements on improvement of utilization of motivators as the tools for raising labour productivity in the organizations with Quality management system

**Grznár, A.:**

Proposal of measures to improve the use of marketing mix in the enterprise ELEKTROKARBON a.s., Topoľčany

**Hanuliaková, S.:**

Proposal of Measurement Package for Increasing Efficiency of In-House Bookkeeping Directives in ASAS, Joint-Stock Company

**Havel, M.:**

Developing project management application complaints in the company LAMDA-MODRA, s.r.o.

**Helťová, A.:**

Proposal to improve system recruitment and selection of employees in the company PALMA Group, Inc.

**Herdics, D.:**

Proposal model to evaluation of the costs and use costs in the management of industrial enterprise

**Hermanský, J.:**

The survey of market research tools and their

employment according to the principles of Quality management

**Hodasová, R.:**

Measurements proposal for production logistics in the company Franke Slovakia, s. r. o., Žilina

**Horvátová, Z.:**

Improvement of educational system for employees of company DOKA Drevo, Ltd. Banská Bystrica

**Hrčková, D.:**

Projection of arrangements to upgrading motivational system of employers in a production

**Hrehušová, V.:**

A blueprint for efficiency of material flow process measures in the company ZF Boge El-lastmetal Slovakia, a. s. Trnava

**Hrušková, N.:**

Using tools of marketing mix in selected industrial companies

**Hrušovský, R.:**

The draft measures to ensure the key managerial skills in selected management positions in the analyzed company

**Hucáková, M.:**

Survey of application of the principle of focusing on the customer and protect its rights by organizations in Slovakia

**Hudák, J.:**

The proposal of measures to improve work motivation of employees in the company VAVAL – Ing. Pavel Vranský

**Ivaničová, M.:**

Suggestion of measures to improve the education system in the enterprise to improve employee performance in the company HRONSTAV 01, s. r. o. Brezno

**Izakovičová, P.:**

The suggestion of methods for assessment of competitive organisations with intergraded system of quality management

**Jakábová, Z.:**

Research of process approach use of quality management in the chosen Slovak companies

**Jakubička, J.:**

Measures for the use of marketing personnel in PSL, a.s.

**Jamrichová, L.:**

Proposal of measures to increase efficiency of the logistics stocks procurement for the company Klimex metallurgical material Ltd., Trnava

**Janičková, J.:**

Proposal of procedural precaution to increase efficiency of the start-up environmental appropriate products (EAP) by plant FESTAP Ltd Bratislava

**Jozefovičová, G.:**

The proposal of improvement of the education system of employees in the company INA SKALICA, spol. s r. o. Skalica

**Jurík, J.:**

Proposal of measures for sustainable development of small and medium-sized enterprises in Slovakia

**Jusková, L.:**

Research of application methods of improving quality management in chosen organizations

**Karlíková, I.:**

Application of stability measures of employees in the company INA SKALICA spol. s r.o..

**Klekner, B.:**

Proposed measures to improve the educational system, improve employees performance in the company PRAKON, Ltd. Prakovec



**Klementis, V.:**

The proposal of measures developing management competences in the business environment of PHOENIX Zdravotnícke zásobovanie, a. s.

**Klochánová, E.:**

The proposal of actions to improve the system of employees motivation in Libeto, a. s.

**Kocian, T.:**

Proposal of measures to improve material flow in the company ŽOS Trnava, a.s.

**Kočanová, Z.:**

Critical analysis of utilizing BSC (Balanced Score Card) and HCS model 3E in the industrial enterprises in Slovak Republic conclusion and recommendation

**Kolarovič, J.:**

Proposals for elimination of impacts of financial crisis to the logistics of industrial enterprises in Slovak republic.

**Kolínek, T.:**

Draft measures to improve the organizational structure of corporate governance GRAFOBAL, a. p., Skalica

**Kollárová, A.:**

The system proposal of mentor education focused in adaptation of new recruits in the company ŽOS Trnava, a. s. Trnava

**Kollárová, T.:**

Suggestion of measures for improving the remuneration system in terms of the company ŽOS Trnava, a. s.

**Korčeková, K.:**

The survey of application of management complaints in economic organizations in the Slovak Republic

**Kostolný, I.:**

Conclusions and recommendations from a critical analysis of corporate social responsibility in the industrial enterprises of the Slovak and Czech republic

**Kotlánová, P.:**

A proposal of steps for improvement of internal directives for account keeping in company I.D.C. Holding, a.s.

**Kováč, M.:**

Monitoring and measurement of research of customer satisfaction in chosen Slovak organizations.

**Kováčová, L.:**

Proposal of the actions for improving of the employees adaptation proces in INA Skalica, spol. s r. o.

**Kozák, J.:**

Analysis of the current condition of internal communication to improve quality of the management system in the company IMC Slovakia, s.r.o. Považská Bystrica

**Kratochvíl, V.:**

Proposal of measures for effective marking of input material and better storage function of material of the matallurgical company ŽOS Trnava, a.s.

**Kresová, K.:**

Proposal measures to improve the financial stability of the company

**Krupa, L.:**

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Proposal for improvement system of project management in organization INA SKALICA s.r.o.

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Suggestion for effectivity increase of chosen processes in company Slovak Telekom, a.s. Bratislava

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Proposal of system of staff evaluation in ZTS - ŠPECIÁL, a. s. company

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Proposal for the use of marketing communications in terms VÍNO MATYŠÁK, s.r.o. Pezinok

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The proposal for rationalization of inventory management and warehouse management in the enterprise Motors International, s. r. o., Nové Zámky

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The proposal system of further education staff of company Cestné a stavebné mechanizmy Tisovec a.s.

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Design of application of tools and methods in optimization of calibration process in ZF Boge Elastmetall Slovakia, a.s.

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Proposal of efficiency the creation and use of marketing mix in terms of HKS Forge, s.r.o. Trnava

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Proposal for a procedure of integration of management systems (quality, environment,

assurance) to the integrated management system

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Making the use of the FMEA method in the company Tecoplast PM Slovakia, Ltd. Myjava more effective

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Implementation Proposal of Chosen Tools and Methods of Evaluation of Functionality and Quality Management Performance

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Proposal for improvement of usage CRM in company RM tes, s.r.o. Trnava

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**Zaťko, I.:**

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**Lovišková, J.:**

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**Mrvová, L.:**

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**Novák, R.:**

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**Polakovič, M.:**

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**Rašľa, V.:**

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**Rešeta, M.:**

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Design and utilisation of controlling principles for investment and enterprise development management

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Methodology Proposal for Improvement of Complaint Management Level in Organizations in Slovakia

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Pecháček, Matej - Paulová, Iveta (ved. práce): A design of concrete indicators of measurement according to the CAF model for town halls, self-government. In: ŠVOČ 51 : 51th International Student´s Scientific Conference. 6th May 2010, Zvolen. - Zvolen : Technická univerzita vo Zvolene, 2010. - ISBN 978-80-228-2053-0, abstract

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Drieniková, Katarína - Hrdinová, Gabriela - Naňo, Tomáš - Sakál, Peter: Analytical hierarchy process (AHP) – tools of innovations in selected strategy processes of responsible entrepreneurship (SZP) – I, II. In: Process management 2010 - Košice : Slovenská asociácia procesného riadenia, 2010. - ISBN 978-80-970458-1-4. - [19]

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INSTITUTE  
OF SAFETY AND  
ENVIRONMENTAL  
ENGINEERING







# INSTITUTE OF SAFETY AND ENVIRONMENTAL ENGINEERING

**Director** Karol Balog, Professor, PhD.  
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**tel.:** ++421918646023  
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## Institute Departments

- Department of Environmental Engineering
- Department of Safety Engineering
- Department of Industrial Safety

## Staff

- Professors: 1
- Assoc. Professors: 2
- Senior Lecturers: 9
- Research Fellows: 1
- PhD Students: 11

## Study programmes

- Environmental Engineering
- Work Safety and Health Protection
- Environmental and Safety Engineering
- Integrated Safety

## Research targets

- assessment of wastes of cutting fluids, cooling emulsion and their life cycle prolongation, changes of composition during microbial contamination
- risk assessment and hazard analysis of industrial fire
- hazard assessment of dangerous wastes and hazardous substances
- fire hazard analysis of industrial dust and flammable materials
- safety analysis of technical systems
- the use progressive oxidation processes for degradation of organic pollutants
- application of SETUR sprinkler for removal of some water pollutants
- utilization of solar energy
- determination of drinking water quality

## RESEARCH CHARACTERISTICS

### Laboratory testing:

- testing of combustibility and explosiveness of substances, product and wastes in different states,
- appraisal of fire-fighting foam and spray properties in the aging process,
- monitoring of chosen factors in the work environment, appraisal of noise and lighting at the workplace,
- analysis of drinking water quality,
- determination of biodegradability of cutting fluids,
- determination of organic pollutants using analytical methods

### Document elaboration:

- danger characterization and risk appraisal of selected substances, products, wastes and technologies in dependence on the partner requisites,
- elaboration of protocol for identification of the external effects, elaboration of documentation on explosion protection,
- elaboration of 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)

### Research studies:

- study of limiting conditions of the initiation of burning process of powder materials,
- impact of fires and its liquidation to the environment,
- environmental cost of the usage of foam extinguishing agents, appraisal of biological degradability of selected foaming agents,
- fire danger of PVC cables and their protection,
- creation of a knowledge database and expert system for the risk appraisal of dangerous substances, products, wastes and technologies and other dangerous processes,
- modelling of impacts of industrial accidents to the environment,
- usage of PC models of material escape modelling, comparison of different types of modelling programs in the field of dispersion of the materials to the environment,
- study of health and safety aspects of occupational indoor environment,
- progress and utilization of small hydro-energetic source in combination with solar equipments for branch of engineering,
- establishment of technical-consulting laboratory for utilizing and consequent propagation of solar energy,
- determination of characteristics of emission quantification and indicators of atmosphere quality in conditions of European legislation,
- The exploitation of advanced oxidation processes in removal of organic pollutants from wastewaters by the use of wastes from production and treatment of metals as catalysts,
- advanced environmentally suitable methods for utilization and removal of wastes from

the machine industry,

- research and development of the utilization of phytomass technologies for liquid fuel production from renewable resources,
- botanical garden as an instrument for escalation of environmental consciousness of citizens,

### Consulting, training and courses:

- training and courses focused on the health and safety at work, safety education on international standards, research coordination for specific application targets and requirements for the increase of the safety of industrial regions,
- guidance for implementation of occupational health and safety assessment series (OHSAS), consulting in the field of emergency planning,
- consulting in utilization of renewable sources of energy.

## PROJECT OF TECHNOLOGY TRANSFER

### Hybrid power supply for technical consultancy laboratory for the use and promotion of renewable sources and energy

Prototype of a hybrid source-based RES construction (hydro-potential, solar, biogas and bioethanol) for long term testing and promotion. Through the proposed interventions the prestige of research will be increased, which will also lead to increased interest in the quest for talent and higher employment in this field. The benefit will be new creative ideas and flexible responses to the needs of small enterprises and their closer cooperation. The resulting effect will be more competitive research teams within the national research, more interest in small and medium enterprises to conduct research focused on innovation in public research institutions, universities and other research centers. Slovak research teams will also compete at the international level, bringing the Slovak research development greater cooperation with the international environment and higher success of Slovak applicants in the 7th Framework Program of EU and other EU initiatives.

## INTERNATIONAL PROJECTS

### EUREKA E!3266/STU/08 (01.01.2008-31.12.2011)

Ivana Tureková, Assoc. Prof. PhD.

Modelling the dispersion of emissions of dangerous substances during major industrial accidents.

The project deals with the ways of supporting the international collaboration in research into the modelling of dispersion of emissions of dangerous substances during major industrial accidents. The FMST SUT Department of safety Engineering is a partner - candidate for EUREKA E! 3266-EUROENVIRON VEBAIR project. The software programs purchased will enable to calculate the dispersion of emissions in residential and industrial areas. The output will be a practical application of monitoring and modelling the dangerous states.

## NATIONAL PROJECTS

### LPP-0171-07 (01.04.2008-31.03.2011)

Anna Michalíková, MSc. Eng.

Natural phenomenon for small and big issues in experiments

A communication portal will be created that will be oriented to the pilot ideas: environmental education and health, physics in common life, astronomy, alternative sources of energy, wastes and recycling ... (Realize after consultations - investigation - with teacher from basic and secondary schools). It will facilitate communication with the public and students of basic and secondary schools. E-materials and recorded experiments will be published on the created web page (it could be used in pedagogical process, also in preparation of talented students to some competition). During the preparation of materials, from teacher's requirements for experiments will be determined which are not able to be realized due to dangerous chemicals, absence of tools and instruments).

### 67/2009 (24.08.2009-31.12.2011)

Karol Balog, Professor, PhD.

Follows the aging process of fire resistance coating on testing samples deposited in the operations environment of nuclear power plants at Bohunice. Tests the function of the intumescent fire resistance coat by use of thermal analysis, high temperature stressing in air condition, and measurement of intumescent ability.

### KEGA 3/6431/08 (01.01.2008- 31.12.2010)

Černecký Jozef, Assoc. Prof. PhD.

Determination of emission quantification and indicators of atmosphere quality in European legislation conditions

The project is focused specifically on the results of research on the subject of state detection and emission production to air in acceptance of changed conditions by European legislation. The research results are missing in actual educational materials. Within the frame of finding a solution, the project will be prepared to complete educational materials for education on subjects such as "Techniques of air protection" and "Technical devices of measurement and monitoring" which will focus on measurement, scoring and optimization of particulate and gaseous emissions. After completion, the proposed project will be explored and documented by research on the practical application of theoretical knowledge.

### KEGA 3/6431/08

Maroš Soldán, Assoc. Prof. PhD.

Determination of emission quantities and quality indicators of air in conditions of the European legislation

The project is focused on concrete results of research when state and production of emissions to air are observed. The conditions modified with European legislative are accepted. The research results are still missing in the study materials. One complete study material for teaching of the subject "Technology of air protection" and "Technical tools of measurement and monitoring" will be prepared and it

will be specialized in measurement, evaluation and optimal amount of emissions of solid and gas polluting substances. This project will highlight an importance of the problematic and research will show a practical application of theory.

#### **KEGA 015-002TUZVO-4/2010**

Karol Balog, Professor, PhD.

Materials in fire protection –university textbook and modern teaching material in the major Protection of person and property and in similar majors

Definition of fire characteristics of combustible materials from aspect of inflammability, rate of flame spread, heat creation by fire and toxic gases of combustion. The methods of parameter determination of material combustibility regarding to particular stages of fire in closed area. Application of fire and life safety characteristics of substances in practice.

#### **VEGA 1/0488/08**

**(01.01.2008- 31.12.2010)**

Ivana Tureková, Assoc. Prof. PhD.

Environmental impacts of fire-fighting foams from extinguishing fires in nature

If fires in nature are not extinguished early they can seriously endanger nature. Fire-fighting foams used in fire-interventions present insertion of these substances into the natural environment and they can cause contamination of the environment. Therefore knowledge of the foam in terms of fire-fighting properties is important, and also of the environmental effect. Because of the actual absence of information about eco-toxicological properties and biological degradation of fire-fighting foams the research focuses on the physical and chemical properties and also the effect of external conditions on the efficiency and stability of foam. An evaluation system of parameters and process for screening the selection of foams will also be designed. This information is necessary for each fire-intervention to reduce the negative impact on the environment.

#### **VEGA 1/0798/08**

**(01.01.2008- 31.12.2010)**

Kristína Gerulová, PhD.

Development and utilization of a small hydro-energetic power source combined with solar systems in machine Technologies

A small hydro-energetic power source with rolling fluid machine represents a unique, patent protected device working on a yet unknown hydro-dynamic principal. The rolling fluid machine device is of a simple construction. It is able to convert hitherto unutilized, low hydropotential into mechanic or electric energy through the function of the rolling fluid machine. On the basis of this finding, together with methods of hydraulics similar to machines, various types of hydroenergetic sources will be modelled. Also designed and tested will be a small hydro-energetic power source combined with solar equipment to utilize in machine Technologies, for example to produce electrical energy for power supply measurement and regulation systems, for pumping, transport, heating or cooling liquids, etc.

#### **VEGA 1/0352/09**

**(01.01.2009- 31.12.2011)**

Maroš Soldán, Assoc. Prof. PhD.

The exposition of advanced oxidation processes in removal of organic pollutants from machine industry wastewaters by the use of wastes from production and treatment of metals as catalysts

The research focuses on innovation of degradation processes of organic pollutants in wastewaters by the use of oxidation in the presence of catalysts. Some wastes from treatment and production of metals will be used, such as red mud, black nickel mud, etc. The new possibilities for reduction of environmental impact from cutting and surface processes will be tested.

### **LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE**

- Assessment of Environmental Effects
- Bachelor Project
- Bachelor Work
- Basics of Environmental Studies
- Basics of Safety Engineering
- Blast and Fire Protection
- Blast Protection and Industrial Safety
- Connoisseurship of Commodity
- Dangerous Activities Management
- Dangerous Activities Psychology
- Danger Effects and Processes Simulation
- Dangerous Materials
- Disposal of Waste
- Dissertation Project
- Ecological Disposal of Materials and Waste
- Educational Activity
- Emergency Preparedness for Accidents and Dangerous Situations
- Engineering Work Environment
- Environmental and Safety Information Science
- Environmental Engineering
- Environmental Chemistry
- Evaluation of Indoor Environment Aspects of OSH
- Fire Dynamics
- Fire Engineering
- Fire and Accident Modelling
- Fire-Fighting Safety for Buildings
- Fundamentals of Environmental and Safety Information Science
- Hazardous Materials
- Human Reliability in Technical Systems
- Selected Chapters of WSHP Control in Companies
- Technological and Natural Emergencies
- Industrial Toxicology
- Informative Techniques in Risk Analysis
- Information Sources in the Field of Integrated Safety
- Inorganic and Organic Chemistry
- Integrated Management of Systems
- Law and Technical Directions of WSHP
- Major Industrial Accidents
- Management of Risk
- Management of Hazardous Operations
- Management Systems of the OSH
- Monitoring of Risk Factors in Environment
- Occupation Safety and Health
- Practice
- Processes of Environmental Technologies
- Project of Environmental Protection
- Progressive Methods of Integrated Protec-

tion of the Environment

- Quality Control and Normalization in WSHP Domains
- Remediation Technologies
- Renewal of Damaged Ecosystems
- Research Work
- 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
- Safety of Industrial Technology
- Safety of Technical Systems
- Social and Economic Aspects of WSHP
- Technical and Safety Conditions of Materials and Constructions
- Technical Apparatus Risks
- Technical Systems Reliability
- Technologies and Environment
- Technologies of Waste Management
- Theory and Management of Safety Control
- Theory of Diagnostics, Maintenance and Repairs
- Thesis / Diploma Work
- Thesis Project / Diploma Project
- Work Safety and Health Protection
- Work Safety of Man

### **GRADUATE THESES**

#### **Bachelor Theses**

##### **Adamičková, I.:**

Industrial water - source, processing and use of nuclear power

##### **Andelková, V.:**

Consideration of actual state of dangerous industrial accidents prevention in the company Chemolák a.s. Smolenice

##### **Belčík, M.:**

Analysis of risk by What-if? and Checklist methods

##### **Belianská, V.:**

Comprehensive assessment of indoor environment

##### **Belko, P.:**

The Work Safety of Drivers of the Transport of Goods in the Environment of the Enterprise Slovak Expedition s.r.o.

##### **Beňová, Z.:**

Evaluating microclimatic conditions at the selected workplace

##### **Birčák, B.:**

Monitoring of radiation characteristics in the process of radioactive waste treatment

##### **Blejštil, V.:**

Radiation safety as a part of Safety and Health at Work in nuclear energetic

##### **Bobušová, M.:**

Utilization of biogas in Slovakia

##### **Bočková, K.:**

Basic methods of measuring and assessing the factors of thermal-humidity microclimate

##### **Bučková, A.:**

Security at a shooting range and adjacent surroundings

##### **Bučková, Š.:**

The study of ozonization influence to selected metal working fluids bio-degradation.

##### **Caletka, R.:**

Analysis of the risk of fire in the selected premises in the company INA Skalica



- Černeková, T.:**  
Possibilities of selected metalworking fluids ecotoxicity assessment
- Čurila, M.:**  
The impact of the introduction of alternative transport fuels to reduce greenhouse gas emissions.
- Dovičič, M.:**  
Biogas production from biomass to produce electrical energy by fuel
- Dragulová, Z.:**  
Biogas plant as a technological unit of biomass processing
- Đurechová, D.:**  
Assessment of noise nuisance in the workplace
- Đurica, A.:**  
Biogas utilization in fuel cells
- Fabianová, K.:**  
Possibilities of nitrate removal from the water by Lemna minor
- Fančovičová, K.:**  
Breakdown of selected waste composting
- Frajka, B.:**  
Duty operators containing fluorinated greenhouse gases
- Fraňová, A.:**  
Studying the size of dust particles
- Galbička, I.:**  
Monitoring of radioactive outfalls from nuclear energetic as a part of human health protection
- Golej, M.:**  
The requirements for the storage of flammable substances in the enterprises
- Hesko, M.:**  
Shipments of spent nuclear fuel by rail
- Hilka, M.:**  
Health and safety during rail welding on the rail superstructure in ŽSR environment
- Horváth, J.:**  
Lighting effect on safety at work
- Hrdá, A.:**  
Transportation and Safety
- Hřebíček, M.:**  
Production of gas emissions in grain drying operations
- Hubinská, T.:**  
Utilization of non-conventional biosorbents for removing hexavalent chromium from water
- Husarčík, M.:**  
The release of fouling from the burning of chosen kinds of plastics
- Iľko, I.:**  
Emission monitoring of selected parameters at Slovenské elektrárne a.s., thermal power plant in Nováky
- Janečková, G.:**  
Improving the system of municipal waste separation
- Juhás, B.:**  
Disposal accident acid bases
- Káloši, Š.:**  
Working at heights analysis in term of Health & Safety in an industrial concern
- Kocsis, A.:**  
The analysis of fire fighting methods with large atmospheric storage tanks
- Kubíková, D.:**  
Assessment of biomass for bioethanol production
- Kubovičová, B.:**  
The analysis of the risks on the particular office of the STSZ COMPANY
- Kučerková, M.:**  
The significance of nuclear reactors in modern society and their environmental aspects
- Lacko, T.:**  
Study of the basic characteristics of the selected hydraulic motor Setur
- Laczo, M.:**  
Emergency scenarios for release of hazardous substances
- Lehotová, K.:**  
Studying the use of selected types of biomass for bioethanol production
- Lukačovičová, R.:**  
Car wrecks as a source of materials and raw materials in company ŽP EKO QELET a.s. Martin
- Lunáková, Z.:**  
Analysis of the industrial accidents in the ZSSK Slovak rail
- Mahút, M.:**  
The evaluation of using sediments of sewage in Slovakia
- Malovcová, M.:**  
Dealing with selected types of waste in PSA Peugeot Citroën Slovakia
- Marinescu, M.:**  
The assessment of lighting in teaching rooms
- Mašková, I.:**  
Monitoring of ground water quality in the selected location
- Matejová, M.:**  
The analytical methods of polycyclic aromatic hydrocarbons determination
- Melicherová, J.:**  
Electrolytic preparation and use of hydrogen
- Mokošová, M.:**  
An analysis of plastics recovery options in the SR
- Mydliar, K.:**  
Initiatory sources and effects on flammability of flammable liquids
- Nikel, P.:**  
Requirements for safe of lifting equipments
- Orgoň, P.:**  
Waste management analysis of JIT plant Johnson Controls
- Peričková, K.:**  
The draft measures to the application of ergonomics in the company I.D.C.HOLDING, SpA, o.z. Trnava
- Pietriková, D.:**  
Recovery of the used tyres in an environmentally friendly product
- Požgay, M.:**  
Analysis of risks at work during electrical installation jobs at building site
- Prechtlová, M.:**  
Rating working conditions in term of sight charge in the bank sector
- Ridzoňová, J.:**  
Treatment of water for industrial purposes in the company Amylum Slovakia s.r.o. in Boleraz
- Salay, V.:**  
Safety of rail transport Slovakia
- Samolej, D.:**  
Safe work with pesticides
- Siebenstich, D.:**  
Operation of a new system of aeration on waste water treatment plant Slovaft (joint stock company)
- Sihelská, M.:**  
Integration of applied system ISO 9001 and new requirements ISO 14001 in conditions of Brezno industry, Ltd
- Strémiová, H.:**  
Processing procedures for handling waste water discharges under the water act
- Šarvaic, P.:**  
Objectivism of lighting in manufacturing corporation Samsung Voderady
- Šćipa, M.:**  
Requirements for safety maintenance and revision of the electric fire signalization
- Škrhová, H.:**  
Environmental safety and food labelling as a means of informing consumers
- Škvarková, D.:**  
Fighting fires in high rise buildings
- Šoltéssová, A.:**  
Possibilities for recovery and disposal sealants of a paint shop
- Štefko, T.:**  
Passive houses
- Šuran, J.:**  
Rules for the safety and protection of health in the environment of the controlled zone of the nuclear power plant.
- Tkáčová, M.:**  
FMEA and its role in analysis and risk management
- Tureková, B.:**  
Reviewing the work safety and health protection in heights and above free depths
- Tušš, A.:**  
Evaluation of safety and health at work and operation at ŽSR under the influence of illegal junk yards
- Urban, J.:**  
Evaluation of possible risk factors of electromagnetic emission
- Valentová, V.:**  
Product Safety and Risk Assessment
- Vargová, O.:**  
Evaluation of drinking water disinfection methods in The West Slovak tank company
- Vengrínová, H.:**  
Appraisal and prediction of the noise on the working place in terms of security and prevention of health at the work
- Vicianová, I.:**  
Analysis and safe management process while transporting dangerous materials with a chosen train loading dock within the Slovak Republic Railways
- Vígláš, L.:**  
Evaluation of pressure effects of vapour cloud explosion of selected dangerous substance in SLOVNAFT, Plc.
- Viček, V.:**  
Evaluation of sediment purified by physical-chemical sewage tank
- Vretenárová, O.:
- Risks of chemicals and their elimination
- Vyskoč, M.:**  
Hazards of asbestos dust
- Zigo, J.:**  
Analysis of sources and causes of work injuries and their prevention

#### Masters Theses

- Adamusová, D.:**  
Possibilities of combined electric and thermal energy production from bioethanol
- Amcha, P.:**  
Ecotoxicity assessment of cutting fluids by a respiration inhibition test of the activated sludge
- Antal, J.:**  
Safety requirements for the installation, operation and maintenance of heating equipment



**Baranovičová, Z.:**

Disposal with electronic equipment and waste electrical and electronic equipment in the aspect of new legislation on waste management

**Bartánusová, Š.:**

The effect of fire on selected soil properties

**Bartovičová, M.:**

Stocktaking and the advancement for handling with fluorinated gases

**Benedikovič, I.:**

Safety listed equipment - electric business in Swedwood Slovakia, sro Trnava

**Blašková, E.:**

Proposal to improve the civil protection in the selected entity

**Bucha, M.:**

Studying the impact of sample size distribution for the process of burning industrial dust

**Bukový, F.:**

Reviewing the possibility of biogas production for energy purposes

**Cabadajová, Z.:**

Emissions evaluation in the company ZF SACHS Slovakia, a.s. Trnava

**Cerovský, M.:**

Analysis of risk in carpentry workshop

**Čapkova, J.:**

Economic aspects of realization of the project on „Hybrid electrical source“

**Danková, M.:**

Protection of persons in the occasion of an incident in the territory of a nuclear device

**Dostálová, M.:**

Evaluation of production and waste management in a selected enterprise of the food industry

**Dubovan, M.:**

Influence of temperature on the propagation of natural flax combustion

**Duda, M.:**

Technical, environmental and economic an assessment of utilization possibilities of selected alternative energy sources

**Ďurčanský, M.:**

Impact of heat straining sample to parameters of inflame industrial dusts

**Ďureje, J.:**

Effect of the temperature on the self-ignition of the porous materials contaminated by flammable liquids

**Ďuriš, L.:**

Internal analysis of labour protection in Execution of imprisonment Institute and Execution of confinement Institute in Ilava

**Fulajtar, M.:**

Technical intervention in underwater salvage operations in the Fire and Rescue Service

**Gajdošová, R.:**

Risk analysis during maintenance of forklifts

**Gálová, M.:**

Project of selected waste type evaluation in PSA Peugeot Citroën Slovakia

**Gergelová, F.:**

Qualitative evaluation of surface water in the Skalica district

**Halás, T.:**

The possibility of using renewable resources of energy

**Halászová, T.:**

Safety requests during building inspection

**Hornáček, M.:**

The impact of external conditions to the promotion of the established process of burning of the combustible dust

**Horváth, M.:**

The influence of temperature on burning of lignocellulose materials

**Hrdličková, E.:**

Quantification of emissions in atmosphere in Holcim Slovakia a.s.

**Hrubšová, J.:**

Production of biogas from biomass for generating electricity using fuel cells

**Hudáková, D.:**

Qualitative and quantitative evaluation of wastewater production in Slovenské Elektrárne, a.s., Elektrárne vojany, závod

**Chochoľoušková, Z.:**

Quality assurance of the water wells in the locality Sucha nad Parnou

**Chválová, T.:**

Reclamation of a landfill of inactive sludge

**Janovič, M.:**

Detection and analysis of dangerous concentration of gases and vapors

**Juráková, S.:**

Environmental policy of LINDSTRÖM, s.r.o Trnava

**Kalčík, T.:**

Safe work instructions as a tool of risk prevention

**Kardošová, J.:**

Integrated safety in Continental Matador Truck Tires

**Kiripolská, V.:**

Environmental safety of the incineration of hazardous waste

**Klenová, A.:**

Analysis of Machine Tools Safety in Secondary School Workshops

**Klenovičová, D.:**

Analysis of selected stimulating drugs by gas chromatography and their effect on consumers

**Kocian, K.:**

The draft of solution for initiation of ergonomic program in production operation in ZF Boge Elastmetall Slovakia a.s.

**Kollárová, M.:**

Analysis of waste water in Lindström Ltd., Trnava

**Konya, J.:**

Study extension temperatures on a layer of industrial dust

**Korec, K.:**

Use of software resources for the modelling of selected parameters of energy production facilities

**Korecká, I.:**

Application of tools in managing their business-oriented environment

**Košíková, J.:**

MONITORING OF LIQUID SEEPAGE FROM SELECTED LANDFILLS

**Kováčová, L.:**

Application of a new classification of dangerous substances and mixtures

**Krásničan, J.:**

Acceptable recommendations and corrective measures in risk analysis

**Kubica, L.:**

Possibilities for production of bioethanol by fermentation

**Lamačka, P.:**

Environmental reporting in organisations

**Luščíková, J.:**

Electrolytic production of chlorine with utilization photovoltaic panels

**Lysá, L.:**

Textile waste recovery in SR

**Makky, Z.:**

Safety requirements for fighting forest fires

**Mančíková, E.:**

Monitoring of the safety level and risk analysis at storage

**Marcišová, M.:**

Assessing the effectiveness of the selected wastewater treatment plants

**Masárová, D.:**

Study of industrial dust ignition

**Meravá, M.:**

Life Cycle Assessment as a tool for environmental management in the ZF Sachs Slovakia, a.s., Trnava

**Michalíková, V.:**

Restoration of areas devastated by inappropriate landfill and their subsequent use

**Míkva, B.:**

Analysis of possible utilization of sludge physico-chemical wastewater treatment plant of PSA Peugeot Citroën.

**Moráková, M.:**

Microclimate condition analysis in an upholstery works

**Mrázová, E.:**

Valuation of efficiency of chosen waste water treatment

**Novoveský S.:**

The case of using computer simulation to support solutions in emergency situations in a crash of ethylene oxide transported by rail

**Palacková, L.:**

Safety of employers worked in retail chain

**Palsovics, Z.:**

The Alternative energy (solar energy) source utilization designated for the apartment block heating

**Pavelka, P.:**

Impact of exposure of chemical factors on the staff at the paint shop of ZF Boge Elastmetall Slovakia a.s.

**Pospíšil, M.:**

Application of FMEA method in reconstruction pumps

**Ridzoň, T.:**

Hazard analysis of industrial dusts in terms of the possibility of ignition

**Sabo, P.:**

Risk assessment of a cooling system by selected method

**Segáňová, L.:**

The Analysis of adsorptive characteristics of selected fallout types

**Sleziaková, O.:**

The exploitation of unconventional sorbents for the stabilization of selected pollutants from pore water of soils and bottom sediments

**Slobodová, D.:**

Analysis of risks in office work

**Srogončíková, K.:**

The use of biomass for energy purposes in the region Puchovska

**Stolárová, M.:**

Safety work on rail siding

**Szúcs Gaál, M.:**

The analysis of work related risk at the workplace in Euromilk company

**Štibraná, L.:**

Analysis of selected parameters of pollution of water flow in the Parná in the village Horné Orešany

**Štibraná, M.:**

Assessment of air quality in terms of pollution sources in selected region

**Štibrányiová, T.:**

Dimension comparison of selected types of biodegradable Plastics

**Taynajová, T.:**

Evaluation method and system accidents for the Human Reliability Analysis Event Tree Technique.

**Ťažký, J.:**

Electrolytic production of hydrogen with utilization of photovoltaic panels

**Tompoš, M.:**

Safety audit in the facility Kursalon s.r.o., Piešťany

**Tompošová, A.:**

Methods for determining the size of dust particles

**Trnovský, M.:**

Impact of pollution on ignition of motor oils

**Urban, F.:**

Saving electricity in the operation of circulating pump for hot water transport technology FOSTAC MAXIMUS

**Urbánek, M.:**

Study of burning from liquid adsorbents

**Valíčková, M.:**

Possibilities of removing selected organic contaminants from soil by land farming

**Vavro, R.:**

Safety requirements on operation of stabile fire extinguishing systems with fluorinated global warming gases

**Vékony, P.:**

Technic-safety and hygienic attributes of dust-air mixtures

**Víglaská, A.:**

The Air Quality Evaluation in Nitra Region in Point of the Chosen Coefficients

**Záhorec, P.:**

Monitoring of groundwater quality in the Trnava region

**Zouhar, M.:**

An analysis of environmental impacts of municipal landfills

**Žilová, A.:**

Optimization of the technological process of a selected Thermal power plant in relation with an aspect of environmental protection.

**PhD Theses**

**Chrebet, T.:**

Influence of external condition on ignition of wood and materials on the base of wood

**Novotný, M.:**

Effect of external conditions to burning rate of liquids

**Svitoková, M.:**

Minimization of radioactive waste from nuclear power plants

**VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS**

**Employee**

**State**

Balog Karol, Professor, PhD.

*Czech Republic*

Tureková Ivana, Assoc. Prof., PhD.

*Czech Republic*

Tomengová Alena, PhD.

*Belgium*

Rusko Miroslav, PhD.

*Czech Republic*

Harangozó Jozef, MSc. Eng.

*Czech Republic*

Hrušovský Ivan, MSc. Eng.

*Czech Republic*

Chrebet Tomáš, PhD.

*Czech Republic*

Balog Karol, Professor, PhD.

*Austria*

**MEMBERSHIP IN SLOVAK PROFESSIONAL ORGANISATIONS**

**Slovak Academy of Science / Slovak Biology Society**

Miroslav Rusko, PhD.

**Slovak National Accreditation Society SNAS**

Karol Balog, Professor, PhD.

**Slovak Standards Institute TK 17**

Karol Balog, Professor, PhD.

**Slovak Standards Institute TK 72**

Miroslav Rusko, PhD.

**Slovak Academy of Science / Slovak Chemical Society**

Richard Kuracina, PhD.

**Slovak Academy of Science / Slovak Ecology Society**

Miroslav Rusko, PhD.

**Civic Association UMBRA**

Maroš Sirotiak, MSc.

**Nature Protection Club**

Maroš Sirotiak, MSc.

**MEMBERSHIP IN INTERNATIONAL PROFESSIONAL ORGANISATIONS**

**Czech Republic Firework and Safety Engineering Association**

Karol Balog, Professor, PhD.

**International Institute of Welding IIW**

Karol Balog, Professor, PhD.

**European Network Education and Training in Occupational Safety and Health (ENETOSH)**

Karol Balog, Professor, PhD.

**PUBLICATIONS**

**Journals**

Rusko, Miroslav - Tureková, Ivana - Očenašová, Dominika: Integrated prevention and pollution control as an important tool of environmental policy in Slovak Republic. In: Research papers Faculty of Materials Science and Technology Slovak University of Technology in Trnava. - ISSN 1336-1589. - Vol. 18, No. 28 (2010), pp. 141-148

Balog, Karol - Kordošová, Miroslava: Work conditions and BOZP in a context of recruitment of young people, disabled people and women on maternity leave. In: Safe work. -

ISSN 0322-8347. - vol. 41, No. 3 (2010), pp. 27-29

**Conferences**

Balog, Karol - Hrušovský, Ivan - Ďureje, Jozef: Simple methods of observation of solid substances tendency to selfignition. In: Fire protection 2010. - Ostrava : Vysoká škola báňská - Technická univerzita v Ostravě, 2010. - ISBN 978-80-7385-087-6. - pp. 7-8

Balog, Karol - Košík, Štefan - Hrušovský, Ivan: Fire danger of white phosphorus. In: Protection of society 2010. - Ostrava : Sdružení požárního a bezpečnostního inženýrství, 2010. - ISBN 978-80-7385-080-7. - pp. 7-14

Blinová, Lenka - Hrušovský, Ivan - Soldán, Maroš: Utilization of biomass for bioethanol production. In: Ecology-2010. - Ufa : UGATU, 2010. - pp. 34-39

Turek, Ľudovít - Balog, Karol: Accident strategy planning in conditions of nuclear power plants. In: Protection of society 2010. - Ostrava : Sdružení požárního a bezpečnostního inženýrství, 2010. - ISBN 978-80-7385-080-7. - pp. 374-383

Tureková, Ivana - Harangozó, Jozef - Buštorová, Martina - Vékony, Peter: Influence of blunder wood dust on temperature of ignition. In: Fire protection 2010. - Ostrava : Vysoká škola báňská - Technická univerzita v Ostravě, 2010. - ISBN 978-80-7385-087-6. - pp. 342-344

Balog, Karol - Tureková, Ivana - Svoboda, Michal - Tenora, Jan: Design of system of stabile fire equipment in production of liquid carbon gases. In: Environmental and safety aspects of fires and accidents 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-119-0. - pp. 385-392

Balog, Karol - Hrušovský, Ivan: Self-heating and self-ignition of solid materials. In: International Doctoral Seminar 2010 : Proceeding. Smolenice, 16-19 May 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-118-3. - pp. 52-57

Buštorová, Martina - Tureková, Ivana - Harangozó, Jozef: Classification of production from aspect of reaction to fire and evaluation. In: Integral safety 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-133-6. - pp. 20-27

Chovancová, Monika - Balog, Karol: Possibilities of mathematical models application to improve an efficiency of evacuation of buildings. In: Environmental and safety aspects of fire and accidents 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-119-0. - pp. 89-95

Harangozó, Jozef - Tureková, Ivana - Buštorová, Martina: Thermal flow and its measurement with radiometer. In: Integral safety 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-133-6. - S. 36-41

Hrušovský, Ivan - Balog, Karol: Thermal self-ignition of cotton destroyed with varnish In: Environmental and safety aspects of fire and accidents 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-119-0. - pp. 79-88

Martinka, Jozef: Perspective of aerogel in fire protection engineering. In: Integral safety 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-133-6. - pp. 96-100

Štefanková, Jarmila - Tureková, Ivana: Safety system in the Slovak republic and crisis prevention . In: Integral safety 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-133-6. - pp. 125-131

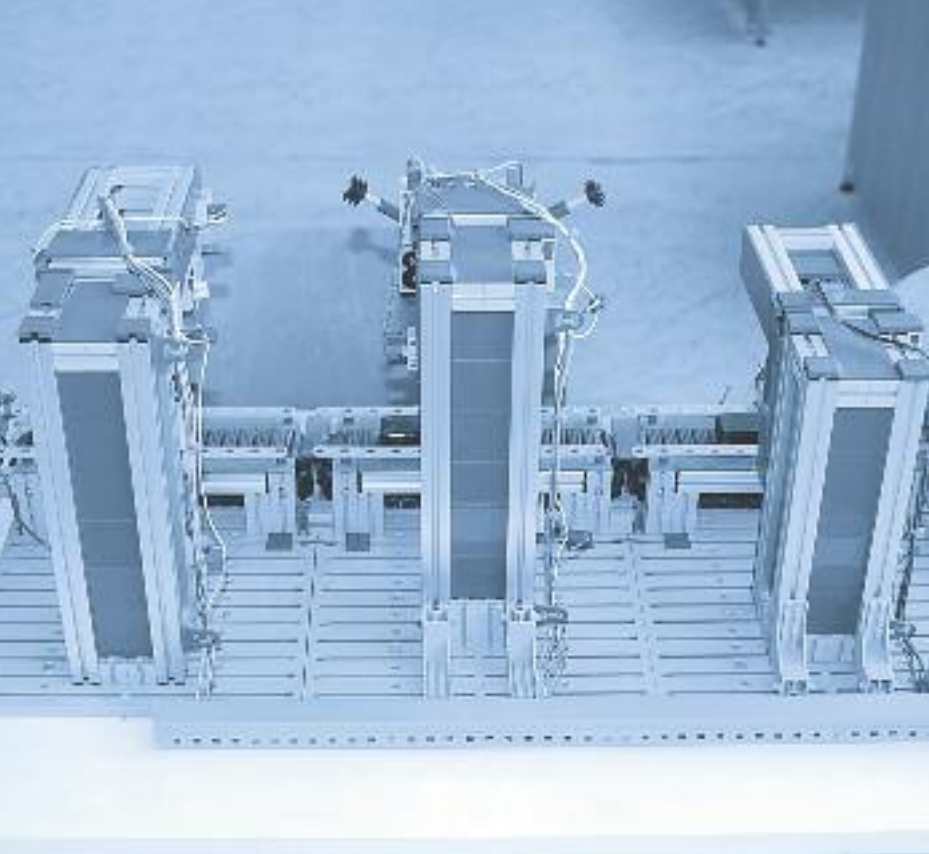
Tenora, Jan - Svoboda, Michal - Balog, Karol - Tureková, Ivana: Evaluation of dangerous accident causes by storing of liquid hydrocarbon gases. In: Environmental and safety aspects of fire and accidents 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-119-0. - pp. 1-7

Turek, Ľudovít - Balog, Karol: Stages of operation termination and decommissioning of JEZ. In: Integral safety 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-133-6. - pp. 152-160

Turek, Ľudovít - Balog, Karol: Measurement and steps to find out and manage accidents on nuclear equipments. In: Environmental and safety aspects of fire and accidents 2010. - ISBN 978-80-8096-119-0. - pp. 365-374

Tureková, Ivana - Vékony, Peter - Beluská, Miroslava: Ignition temperature of dust clouds. In: Integral safety 2010. - Trnava : AlumniPress, 2010. - ISBN 978-80-8096-133-6. - pp. 142-146

Vičková, Henrieta: Analysis of fractions of sawdust with laser dust meter. In: Interactive conference of young scientists 2010. - Bratislava : OZ Preveda, 2010. - ISBN 978-80-970421-5-8. - pp. 96, abstract



**INSTITUTE  
OF APPLIED  
INFORMATICS,  
AUTOMATION  
AND MATHEMATICS**







# INSTITUTE OF APPLIED INFORMATICS, AUTOMATION AND MATHEMATICS

**Director** Peter Schreiber, Assoc. Professor, PhD.  
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## Institute Departments

- Department of Mathematics
- Department of Applied Informatics and Industrial Automation

## Staff

- Professors: 5
- Assoc. Professors: 10
- Senior Lecturers: 21
- Research Fellows: 5
- PhD Students: 18

## Study programmes

- Applied Informatics and Automation in Industry
- Automation and ICT Implementation in Processes

## Research targets

- control theory, control systems, control systems sensibility and robustness, PLC
- information and database systems
- client-server architecture systems
- artificial intelligence and expert systems, genetic algorithms, fuzzy sets and systems
- system modelling and simulation
- computer graphics, graphical and CAD/CAM systems
- CIM
- multimedia, virtual reality
- properties of solutions of ordinary differential equations
- metrics and topological properties of real functions
- computer graphics – geometry problems
- fractals and chaos
- graph theory – algebraical and topological graph theory
- geometric interpolation of massifs
- rationalization of teaching in the sphere of contents, methods and forms, e-learning

## RESEARCH CHARACTERISTICS

The Institute's research is oriented to the process of control informatization and automation fields on all levels of production control, i.e. technological, workshops and managerial, in consideration of new trends in the mentioned fields (development of intelligent control methods, new software support, new trends in the information storage, obtaining and using multimedia and graphic systems, process visualization field, etc.). With the orientation on production processes we reach close co-operation with other FMST institutes. Actually we increase part of applied research at the expense of basic research. This depends on the increasing interest of companies to solve their real problems.

The main fields of research: information and database systems, software engineering, control and regulation systems of technological and production processes, including the questions of control quality, optimality, sensibility and robustness of control systems, as well as control system reliability, modeling and simulation, graphic and multimedia systems, intelligent control systems (genetic algorithms, neuronal networks, fuzzy controllers, expert systems, systems to support decision, ...). The scope of the mathematical part of the institute covers differential equations, real functions, fractals and chaos, graph theory, teaching rationalization methods, E-learning.

Institute AIM provides math, information and automation support. Besides scientific-research projects, the institute focuses also on education projects, which are of interest from several views as e.g. research applications, rapprochement contacts, material and financial contributions.

## INTERNATIONAL PROJECTS

### Diversity (01.01.2009 - 31.12.2011)

Oliver Moravčík, Professor, PhD.

### Improving gender diversity management in materials research institutions

The DIVERSITY project is an international consortium of 14 partners from 11 European countries: Germany, Austria, Belgium, France, Spain, Italy, Sweden, Slovenia, UK, Slovakia, and Greece. Project "DIVERSITY" is a 36 month project funded by the European Union within the 7th Framework Programme.

## NATIONAL PROJECTS

### APVV-0308-07

(02.09.2008-30.06.2010)

Peter Schreiber, Assoc. Prof. PhD.

### Nuclear and radiation safety demonstration methodology for spent fuel container transportation based on experimentally acquired data

It is impossible to perform direct measurement of spent fuel residual output in the container. In the case that the container is presented as a mathematical model of a specific thermal system, we would be able to derive residual output based on power

proportions, or on the basis of known or measurable physical values (heat capacity, surface, the container and surrounding temperature, heat transition coefficient, etc.). These values could be a link to residual output computation. Obtained values should be compared with values received from standard atomic-physical computation.

### KEGA 3/7285/09

(01.01.2009- 31.12.2011)

Pavol Božek, Assoc. Prof. PhD.

### Content Integration and Design of University Textbook "Specialized Robotic Systems" in Print and Interactive Modules for University of Technology in Zvolen, Trenčín University and Slovak University of Technology in Bratislava.

The project aims to develop an undergraduate textbook writing and interactive multimedia form. Movies made on robotechnologic specialist departments will complement each chapter and the aforementioned written university textbooks.

### VEGA 1/0282/08

(01.01.2008- 31.12.2010)

Jozef Vaský, Assoc. Prof. PhD.

### A 3D model generated by means of reconstruction from partial engineering drawing orthogonal views

Engineering drawing is the formal 2D notation of geometrical, material and technological features of a real part. Today's CAD/CAM systems are based on 3D solid modeling. They make it possible to generate drawings from visual and technological operations. It would be therefore effective to transform paper drawings of parts right into 3D representation.

### VEGA 1/0068/08

(01.01.2008- 31.12.2010)

Róbert Vrábek, Assoc. Prof. PhD.

### Analysis of the boundary layers for three and four point boundary value problems of singularly perturbed second-order ordinary differential equations

We provide geometric and quantitative analysis of the dynamics of three and four point boundary value problems for singularly perturbed second-order ordinary differential equations  $\epsilon y'' = f(x, y, y')$  near to the critical manifold (hyperbolic and non-hyperbolic).

### VEGA 1/0170/08

(01.01.2008- 31.12.2010)

Pavel Važan, Assoc. Prof. PhD.

### Proposal of an alternative procedure for manufacturing lot size determination in flexible manufacturing systems by simulation optimization

The main goal of the project is the proposal of an alternative procedure of manufacturing lot size determination in flexible manufacturing systems by simulation optimization. The procedure will be designed and verified for piece and batch production.

### VEGA 1/0582/08

(01.01.2008- 31.12.2010)

Renáta Masárová, PhD.

### Extension types of convergence in fuzzy spaces

Analysis of various types of convergence in

fuzzy spaces, fuzzy metrics and types of convergence in these metrics, problem analysis according to commonplace axioms and selection optimal application and numerical time-consuming algorithm.

### VEGA 1/0368/08

(01.01.2008- 31.12.2010)

Peter Schreiber, Assoc. Prof. PhD.

### Artificial intelligence in flexible manufacturing systems control

The traditional procedural (imperative) approach is used in the programming of programmable production systems. A sequence of instruction must be given in order to execute a required function.

## LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

- Applied Mathematics
- Automation of Data Acquisition and Processing
- Bachelor Thesis
- Bachelor Project
- Graduation Thesis
- Diploma Project
- Dissertation Project
- Graphical and Multimedia Systems
- Information systems
- Real-Time Information Systems
- Information Technologies
- Integration of Production Control Systems
- Intelligent Control Methods
- Internet Technologies
- Communication Technologies
- Mathematical Methods of Experiment Planning and Evaluation
- Mathematics I
- Mathematics II
- Mathematics III
- Modeling and Simulation of Systems
- Neural Networks and Genetic Algorithms
- Object Oriented Programming
- Practice
- Pedagogic Activities
- CIM (Computer Integrated Manufacturing)
- Computer Architecture and Operating Systems
- Computer Graphics and Digital Image Processing
- Computer Networks
- Advanced Internet Technologies
- Programming Languages
- Programming of Industrial Controllers
- Programmable Logic Controllers
- Control System Design
- Knowledge Representation and Inference Mechanisms
- Control of Flexible Manufacturing Systems
- Software Project Management
- Production Systems Control
- Simulation Optimization in Production Systems Control
- Software Engineering
- Decision Support Systems
- Technical means of automating control
- Automatic Control Theory
- Systems Theory
- Complex Systems Theory
- Information Systems Development
- Basics of Automated control

## GRADUATE THESES

## Bachelor Theses

**Andris, F.:**

Interactive multimedia application for teaching work with computer

**Babiarová, D.:**

The compression of graphic formats of photographs

**Bánovský, P.:**

The graphic video formats on web pages

**Blažíček, L.:**

Proposal for Management of a House with Renewable Power Sources

**Bobák, I.:**

Design and creation of application for supporting evidence in Personnel

**Boháčik, M.:**

Proposal of wireless network for residents or company

**Brázdovič, M.:**

Control of alternative source of energy by controller ELESTA

**Brzobohatý, P.:**

Computer support for a qualitative assessment of the atomic emission spectra spectroscopy

**Bugár, D.:**

Modernisation of network infrastructure in a medium-sized company

**Buchálik, A.:**

Electronic management of SMD feeders

**Cadletí, C.:**

Design and implementation of my own online store

**Cepko, I.:**

Production management Efficiency improvement of diode tape fabrication in Semikron s.r.o. company

**Csőrgéi, B.:**

Exploitation and security of a Wi-Fi network at planning home and company networks

**Čačík, P.:**

Influence of compression formats for the optimal situation of video on the web

**Čelko, A.:**

Problem of development help files

**Čuvala, P.:**

Design and partial implementation of information system for caterers

**Daniš, L.:**

Management of software equipment by MS for middle size company

**Daniš, M.:**

Use Wifi and safety in building domestic and corporate networks

**Dobšovič, M.:**

BEAM robots

**Đuriš, R.:**

PLC and their practical applications

**Farkaš, J.:**

The choice of convenient sensors, useful in the realization of the robot for UIAM

**Furko, M.:**

Technical resources to increasing safety of objects (camera systems)

**Gramblička, M.:**

The Imaging devices of computer graphics

**Grman, P.:**

Digitizing of analogue audio record

**Hajka, L.:**

Compression of graphical video formats

**Hajka, T.:**

Graphics formats of photographs in terms of placements on web pages

**Hanzel, M.:**

Making of Interactive Multimedia textbook for technical Subject

**Haruštiak, P.:**

Projection and control of biogas station

**Holička, P.:**

The Proposal and Realisation of Interactive Multimedia Application to Support Teaching of Mathematics III., the part: „Laplace Transformation“

**Holík, J.:**

Design and implementation of physical object of control and related control program for Simatic S7-300 station

**Horka, M.:**

The issue of security of computer networks using IP protocol filtering

**Hornák, M.:**

Interactive multimedia application for electrotechnical measurement

**Horváth, A.:**

Technical equipment for increasing building security (access control systems)

**Horváth, P.:**

Computer application form teaching ČRS

**Hrašna, P.:**

Proposition and realization small IS in the scene of Web with using UML

**Hříbal, J.:**

Proposal and realization of small IS in Web environment using UML

**Hýroš, M.:**

Web system for automatic registration of new user into LAN (GNU/LINUX)

**Chobot, T.:**

Technical equipment which increase the security of objects (camera systems)

**Imanbakiev, A.:**

Portal for Study Materials Exchange

**Jamrich, M.:**

Creation of border line for statement and configuration of DHCP server

**Jančarek, D.:**

The use of WinAPI in network monitoring

**Janiš, M.:**

Proposal of MM application for technical subject

**Jonáš, P.:**

Design and realization of small IS in Web environment using UML

**Juroš, M.:**

Design and realization of interactive multimedia application

**Kaprinay, A.:**

The system of publishers in UML notation

**Karak, J.:**

Design and creation of an application for the registration of fire extinguishers

**Kelescényi, Z.:**

Design and creation of multimedia application for interactive teaching of Computer Architecture

**Kessel, S.:**

Design website for UIAM needs

**Kišš, E.:**

Transformation VHS data into digital form

**Kočíšová, J.:**

Design and implementation of home finance administrator

**Kodhajová, A.:**

Public storage system in UML Notation

**Kojnok, J.:**

Implementation of programmatic modules of professional levels on S7-300

**Koňuch, R.:**

Technical equipment for increasing building security (security systems)

**Kopecký, R.:**

Application inertial navigation system to control robot

**Kotřík, M.:**

Proposal and implementation of on line reports for operational IS

**Kozic, P.:**

Production of multimedia textbook for the selected subject

**Kozma, P.:**

Interactiv multimedia application Input output devices of computer graphic

**Krajčírovič, M.:**

The control of stepping motors using assembler

**Krajčovič, L.:**

Cutting of multichannel audio tracks

**Královič, R.:**

The issue of creation of help files from the web environment

**Krchňák, T.:**

Making of Interactive MM Handbook for Specialized Subject

**Krivošík, T.:**

A partial plan of IS for the service management of the Samsung company

**Krumpál, P.:**

Design and implementation of a VPN network using SSL technology

**Krupa, L.:**

E-commerce for a computer shop

**Krupánszki, M.:**

Projection and realization of safe computer network for a small company

**Kubica, M.:**

Support management system of work tasks in an IT company

**Kudlík, M.:**

Technical equipment for increasing the security of properties

**Kulich, M.:**

Technical hardware increasing object's security ( camera systems based to IP cameras)

**Ladányi, J.:**

Control Web driver for virtual appliances

**Lečko, J.:**

Implementation of the virtualization of the servers in the small business environment

**Lehotský, M.:**

Proposal and realization of multimedia application for interactive education of the subject Communication Technologies

**Lehotský, S.:**

Uploading data from EOL testers to SQL database

**Libošvár, K.:**

Algorithms for searching of strings in text files

**Lipnický, M.:**

Design and physical model junctions and related control program for the station Simatic S7-300

**Macuľa, J.:**

Possibilities of securing wireless networks

**Maček, P.:**

Design and creation of interactive application for industrial robot operating

**Martinkovič, J.:**

Options for providing wireless communication in data networks

**Matúš, M.:**

Ordering material in the firm via intranet

**Mečír, T.:**

Suggestion and realization of interactive application Matrices and determinants

**Ment, P.:**

Application and implementation of control and visualization testing of high-pressure pumping devices

**Mihálik, R.:**

Design and implementation screen printing manufacturing line control with PLC-S7 300 and operator panel OP25

**Mihočka, M.:**

Propose local area network and its security

**Michaličková, K.:**

Web portal for generating HTML mails with attachments

**Minarovič, J.:**

Creation of practical examples and multimedia presentation for an interactive teaching Simatic S7-GRAPH

**Mudroch, P.:**

The issue of making printouts from the web

**Neštický, M.:**

Animation of inertial navigation system

**Ondrejčka, M.:**

Cryptographic Hash Algorithms

**Ondruška, J.:**

Management systems and their use in industry

**Oravec, Ľ.:**

WebfileManager by AJAX technology

**Pagáč, I.:**

Desing and realization of moderate information system using UML

**Pekar, R.:**

Universal File Manager for Web interface

**Peky, L.:**

Design of e-shop for computer store

**Pisarovič, A.:**

Instructions for exercises for the controller ELESTA

**Podkonický, B.:**

Realization of the program for teaching of combinatory

**Predný, M.:**

Proposition and securing of wireless computer network

**Púchly, F.:**

Creating an application for registration of IT assets

**Putnok, M.:**

Parametric tests of the statistical hypothesis

**Rášo, O.:**

Analysis of Automated Systems of Measuring the Length in the Space

**Rosinský, M.:**

Lossy audio compression

**Rybanský, J.:**

Braitenberg vehicles

**Segiň, E.:**

Possibilities and perspectives of the use of RFID technology

**Schavel, F.:**

Design and creation of multimedia application for interactive learning MS Visual C#

**Simon, P.:**

The issue of security of computer networks using IP protocol filtering

**Skýpala, M.:**

Using intranet to manage company

**Sláma, M.:**

Design and implementation of small IS using UML

**Sobota, M.:**

Design and realization of interactive multimedia application for the support of teaching subject of Mathematics II, part "Differential equations"

**Socha, T.:**

Nonparametric methods for hypothesis testing

**Sroka, M.:**

Artificial intelligence in games

**Šimúnek, P.:**

Internet application for institution

**Šlauka, M.:**

Design of floor electric heating in accommodation unit with regulation

**Šlauka, R.:**

Visual Studio 2010

**Šperka, Ľ.:**

Wide area metropolitan network optimization (active part)

**Šternócky, M.:**

Multimedia application - raster algorithms in an environment of FLASH

**Štulajter, J.:**

The design and implementation of document management module and associated process flows in the existing system of a company

**Švec, O.:**

Web application for generating HTML emails with the attachments

**Táčovský, M.:**

Wireless network proposal for multi-family house or firm

**Taranda, O.:**

Design and realization of small information system using UML

**Tarr, P.:**

Display devices of computer graphics

**Tibenský, S.:**

Design and implementation of small information system using UML

**Tóth, D.:**

Proposal and implementation of a data administrator with integrated FTP client via .Net platform support

**Turičik, M.:**

Design and implementation of manufacturing control equipment for molding plastic sheeting

**Turzík, P.:**

The analysis and design of a system for managing supplies in the production process

**Valach, Ľ.:**

Web application to monitor electricity consumption

**Vávrová, L.:**

The Guard of Students in FMST

**Vereš, J.:**

Lossless audio compression

**Vontzemü, O.:**

The use and security of Wifi in building business networks

**Vystrčil, R.:**

Computer viruses and protection against

**Zelenay, L.:**

Design and implementation of multimedia applications and interactive learning object Object Oriented Programming

**Zsideková, K.:**

Comparison of the supporting management system for companies in view of the product

**Masters Theses**
**Ágh, D.:**

The sensitivity of the closed control circuit for the controller parameters

**Arpáš, F.:**

Control of CCTV camera via internet

**Babolčai, A.:**

Replication of PostgreSQL database

**Bali, P.:**

Dynamic routing and its implementation in wireless networks

**Baráth, J.:**

Design and creation of control system for robot with electric gear

**Batík, M.:**

Design for computer security E-learning portal

**Belavý, Ľ.:**

Colour pattern finish with 3D preview

**Belian, M.:**

Gnome applet pre driver FT1000

**Belko, S.:**

Producing proces improvement of windows with simulation assistance

**Bendíková, R.:**

A Proposal of Information System for Stockholding

**Berner, T.:**

Information system design for company dealing with fabrication and sale of fireplaces

**Blaho, P.:**

Improvement the proces of manufacturing plastics parts

**Blinka, P.:**

Draft commercial warehouse information system

**Blíšťak, P.:**

Design of information system for commercial company

**Bočkay, A.:**

Crossroad system simulation

**Bohunický, T.:**

Comparison of frameworks for PHP and their use in developing applications

**Cerina, M.:**

Creation of an electronic teaching portal on topic of „ Selected Chapters in Graph Theory“

**Cisár, V.:**

Module of heating for building control system for eurohouse, s.r.o. company

**Čeč, T.:**

Design of portal for teaching mathematics

**Čul, M.:**

Interactive presentation of graphics algorithms in Java

**Dlhý, A.:**

Implementation and integration of new modules and features into CRM system SugarCRM

**Drinka, B.:**

Simplification of Creation of Information Systems in Developmental Lazarus Environment

**Dubravec, M.:**

High-speed networks and their application in praxis

**Đurkovičová, J.:**

Implementation of ITIL in ŽP Informatika Ltd.

**Einšpigl, J.:**

Design and implementation of small IS with use BPMN and UM

**Ergang, R.:**

Proposal and implementation of web sites using SSL and IPsec technology



- Fedorová, E.:**  
The analysis and use of the metrics usability for the testing of software
- Gajarský, M.:**  
Virtual Object for Virtual PLC
- Gono, M.:**  
Data capturing and analyzing of the system logs in the critical network infrastructure (Internet, DMZ)
- Gottfried, T.:**  
Draft management of heating system
- Graňák, B.:**  
Transmitting IP services over HFC net CATV
- Hajdín, M.:**  
The proposal of database system for the doctor's ambulance in notation UML
- Halenárová, L.:**  
Generating of one-time authorization sequences for Linux server
- Határ, I.:**  
Possibilities of securing wireless broadcast and its impact on transmission attributes
- Hazuchová, K.:**  
Creation of learning portal
- Herceg, J.:**  
Module for recording travel orders in the CRM system
- Heteš, M.:**  
Simulation of technological processes
- Hlobík, M.:**  
Simulation of production of plastic moldings in an environment of Witness
- Hnojčík, P.:**  
Interactive visualization of sorting algorithms
- Horský, M.:**  
Analysis and design of data warehouse faculty
- Hrozný, T.:**  
Design of a databases system for hotel in UML notation
- Hucík, V.:**  
Proposal and implementation of a small information system using BPMN and UML
- Hustý, P.:**  
Proposal and implementation of the terminal network on the basis of the protocol LTSP
- Ivanovičová, E.:**  
Automatic generation of model assemblies using the VBA interface
- Jančula, M.:**  
Identification of proportional oscillatory systems with transport delay using Matlab
- Jurovatá, D.:**  
Performance evaluation of the production line for the trunk panel production by simulation
- Kalanka, F.:**  
Proposition and creation of education portal
- Karabová, L.:**  
Partial proposal solution of assurance of quality process of the software systems evolution
- Keleši, A.:**  
The analyse of Just in Sequence components delivery system into a production plant
- Keselyová, A.:**  
The Proposal of information system for the primary school and kindergarten
- Kičin, M.:**  
Implementation of Travelling Salesman Problem Solver
- Kido, P.:**  
The design of an information system for building company
- Kič, J.:**  
Automatic generating assembly model in Inventor VBA
- Klimo, T.:**  
Virtual 3D scene characters
- Klokner, L.:**  
Developing a system for managing access to wireless network
- Kobetič, J.:**  
Web portal of frisbee team
- Kocáková, N.:**  
Performance evaluation of the door panel production line by simulation
- Koníčková, G.:**  
Design of an information system for computer shop
- Korytár, M.:**  
The proposal for an integrated security system using LAN
- Kováčik, M.:**  
Framework of the outline of the room created by the set of photographs
- Kováčová, M.:**  
The utilization of geomarketing by optimization's design of network location service
- Kozák, D.:**  
Design of Information system for administration and practice of tests functionality of company systems.
- Kozáková, A.:**  
Design of database system for insurance company in UML notation
- Kozma, M.:**  
Suggestion of database system for car sale in UML notation
- Krajčír, L.:**  
Design of an information system for a software company in the UML notation
- Královič, T.:**  
Projection of control loops with digital controller DC1020
- Križan, M.:**  
Project of modifications process and services for acquirement certificate ITIL.
- Krško, R.:**  
Design and implementation of a virtual "marketplace" with a link to the ERP system
- Kubina, M.:**  
Creation of an E-Learning portal for mathematical analysis
- Kuna, I.:**  
Implementation of selected industrial busses to microchip PIC
- Lackovič, M.:**  
Improving of the PCB manufacturing process using simulation
- Lenický, L.:**  
Simulation of conveyor technology in the automobile industry
- Lukáč, M.:**  
Database application on the web (for a Ltd. company)
- Lukáč, M.:**  
Electronic Shop
- Luptovský, L.:**  
Monitoring systém of process level control
- Macháč, A.:**  
Design and implementation of an information web portal using BPMN and UML
- Malík, L.:**  
Analysis of wireless network, their security, risks and options of security
- Máliš, M.:**  
Verification of junctions throughput by using simulation
- Marko, B.:**  
Information system of Stetson company, Ltd.
- Meliška, M.:**  
Proposal of information system for registering people for a personal agency
- Michač, Z.:**  
Electronical guiding of a solar panel according to the position of the sun
- Mikuš, A.:**  
Design of a database system in UML notation
- Mikušík, M.:**  
Internet telephony, and its implementation
- Mišťina, F.:**  
Comparison of model predictive algorithms for a distillation column
- Moravčík, J.:**  
GAMP Guide - forms processing and presentation
- Motúz, P.:**  
Application of database system for hospital in UML notation
- Mráz, J.:**  
Concept and implementation of the system, which controls experimental aspect of solar panels in the Control Web environment
- Nemeškal, A.:**  
An Interactive Model Of the Robot In Module SketchyPhysics
- Olah, M.:**  
Automatic passage control of underground road communications
- Opálek, A.:**  
Proposal, installation and configuration of devices for the economic information system and data backup at the institute of SAS
- Orlický, M.:**  
Design of an information system for the Hospital of St. Lukáša in Głanta
- Ormandy, T.:**  
Partial suggestion directive for testing of big software systems.
- Panáč, B.:**  
Controlling and visualization of technological devices in open source environment
- Paraj, L.:**  
Developing Enterprise Services for SAP IS-U/CCS
- Partel, P.:**  
Design and implementation of information system dealing with the sale of plastic Windows
- Pavelek, M.:**  
Utilization of simulating optimizing in order to define the optimal size of production amount.
- Pavelka, M.:**  
The comparison of numeric methods for calculation of definite integral
- Piaček, M.:**  
Creating an electronic portal on the topic of teaching Infinite Number Council
- Pintér, T.:**  
Testing of fire unit software
- Plevjak, J.:**  
Sauna control by computer
- Ploczek, M.:**  
Problem solving of operation scheduling by simulation methods.
- Polakovič, P.:**  
Process managing using Siemens Simatic
- Pompura, T.:**  
Utilize usability metrics of testing SW
- Popelka, D.:**  
Proposal of information system for company dealing with the sale of building materials
- Porádek, M.:**  
Decision of utilization of identification cards
- Potúček, P.:**  
Application for performance testing of processors
- Rakús, M.:**  
Motions based on dynamic infrastructure IBM and VMware components

**Repta, J.:**  
Design and implementation of Information System Didaktik's company using UML and UP.

**Ronec, L.:**  
Design of the information system for the KNOTT company

**Sedláček, L.:**  
Influence of priority rules for schedule of operations in manufacturing system

**Sedláčková, D.:**  
Design of an information system for the founder of gastronomic establishments

**Seitler, P.:**  
Interactive visualization of 3D scenes in real time

**Skripčák, T.:**  
Generation of medical knowledge out of data

**Sládek, R.:**  
Electronic learning portal for applied mathematics

**Slaninka, P.:**  
The possibilities reduction of charges in production by simulationed optimisation

**Slobodník, T.:**  
Testing model of technological process

**Sokol, J.:**  
Adobe Flex application for managing network services

**Sopúšek, A.:**  
Evaluation of material flow production system using the method of VSM

**Stachovič, M.:**  
Optimization of production process adjustment of cutting area in company Delphi Slovensko s.r.o.

**Sučan, M.:**  
Compare PLC Siemens and Schneider

**Szabó, O.:**  
Design of a smart refrigerator information system

**Szóke, K.:**  
Visualization of simple objects using OpenGL

**Šadlák, P.:**  
Comparison of determining the size of the batch simulation optimization method with traditional procedures

**Šimončík, R.:**  
Information system design for microtunneling company

**Škreňo, P.:**  
Design and optimization of infrastructure services with use of virtualization Technologies

**Škvarenina, M.:**  
Projection of information system for tennis academy

**Šmelcer, P.:**  
Detection of edges in a digitalized technical drawing

**Štefák, M.:**  
Building a portal to enforce the competitive online environment

**Štetiarová, K.:**  
The Information System Design of Advertising Agency

**Štiga, P.:**  
Design of interactive physical simulations on the Java platform with data output

**Šupola, L.:**  
This thesis is an implemetation of Web based portal for sales database

**Švihorík, J.:**  
Creating an electronic teaching portal on "Systems of linear algebraic equations"

**Terek, A.:**  
Creating an electronic authoring portal referring to mathematic analysis

**Toma, M.:**  
Turbocompressor control algorithm draught and implementation of management scheme in the information network.

**Tomeček, J.:**  
Technical trade analysis

**Tomšík, P.:**  
Implementation of module "Dealings" into IS Asset Managemer

**Tóth, P.:**  
Security of identification cards

**Trnka, K.:**  
The design of the welding manufacture line in the automotive industry

**Turányi, M.:**  
Design and analysis of technical preparation of production for IS production planning and control

**Uhlík, M.:**  
Database applications in a web environment - module production schedules

**Uhrík, R.:**  
Evaluation of an influence of chosen priority rules for appraisal of operations Schedule

**Ungerová, S.:**  
Partial design solution to ensure software systems development quality

**Vanáková, M.:**  
Document management integrated in a company information system

**Vañhara, R.:**  
Optimizing the costs of transportation and holding stocks

**Vdovec, J.:**  
Proposition and implementation of portal system for company

**Vlachovič, P.:**  
A proposal of controlling a traffic junction through traffic signals (CSS), the automation of operation and solution simulation in a program

**Výborčík, B.:**  
Visualization method for morphology of workspace

**Vyskoč, M.:**  
Development of preliminary university ontology and mapping

**Záhorec, L.:**  
Design and implementation of an web-portal about software Adobe Flash

**Zámpory, R.:**  
Design of method of production lot size determination by simulation optimization

**Zemánek, M.:**  
Development of applications based on Java Web Start

**Zich, P.:**  
Design of Electronic Educational Portal

**Zvonár, R.:**  
Partial draft of the information management system documentation

#### PhD Thesis

**Iringová, M.:**  
The evaluation of the impact of the priority rules in scheduling operations for the production goals

**Nemlaha, E.:**  
Risk Analysis of Safety Critical Systems

**Eliáš, M.:**  
Automation of 3D model reconstruction from 2D orthogonal vector record

**Palaj, J.:**  
Generation of 3D models from 2D vector record with usage of graph theory

**Juhásová, B.:**  
Control quality of mechatronics system with flexibility

**Bezák, T.:**  
Methodology for application of IEC 61131 and IEC 61499 international standards in the development of distributed control systems

**Křižanová, G.:**  
Alternative method for determining the size of the lot

**Eliáš, A.:**  
Virtual process communication design

**Jedlička, M.:**  
New Approach to Reliability Assessment of Control Systems Software

**Juhás, M.:**  
Influence of variable parameters of flexible mechatronics system on control quality

**Trnka, A.:**  
Using of the datawarehouses in the control process

**Kebísek, M.:**  
The utilization possibility of data mining in industrial process control

**Bezák, P.:**  
Using genetic algorithms in industrial systems

**Halenár, I.:**  
Using a neural networks to securing communications management systems

#### VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

Božek Pavol, Assoc. Prof. PhD.  
*Russia*  
Urbaníková Marta, Assoc. Prof. PhD.  
*Poland*  
Božek Pavol, Assoc. Prof. PhD.  
*Czech republic*  
Važan Pavel, Assoc. Prof. PhD.  
*Czech republic*  
Pauliček Róbert, MSc. Eng.  
*Czech republic*  
Eliáš Michal, PhD.  
*Czech republic*  
Tanuška Pavol, Assoc. Prof. PhD.  
*Czech republic*  
Kebísek Michal, PhD.  
*Czech republic*  
Moravčík Oliver, Professor, PhD.  
*Austria*  
Moravčík Oliver, Professor, PhD.  
*Germany*  
Schreiber Peter, doc.Ing. , CSc.  
*Germany*  
Tanuška Pavol, Assoc. Prof. PhD.  
*Germany*  
Halenár Igor, PhD.  
*Germany*  
Eliáš Michal, PhD.  
*Germany*  
Schreiber Peter, Assoc.Prof. PhD.  
*Germany*  
Tanuška Pavol, Assoc.Prof. PhD.  
*Germany*  
Važan Pavel, Assoc.Prof. PhD.  
*Croatia*  
Tanuška Pavol, Assoc.Prof. PhD.  
*Croatia*  
Schreiber Peter, Assoc.Prof. PhD.  
*Croatia*

## MEMBERSHIP IN SLOVAK PROFESSIONAL ORGANISATIONS

### Association of Slovak Scientific and Technological Societies

Mária Mišútová, Assoc.Prof. PhD.

### Mensa Slovakia

Marcel Abas, PhD.

### Slovak Association for Geometry and Graphics

Mária Mišútová, Assoc.Prof. PhD.

### SSKI – Slovak Society for Cybernetics and Informatics of Slovak Academy of Sciences (member of IFAC)

Mária Mišútová, Assoc.Prof. PhD.

Peter Schreiber, Assoc.Prof. PhD.

Pavol Tanuška, Assoc.Prof. PhD.

Pavel Važan, Assoc.Prof. PhD.

Oliver Moravčík, Professor, PhD.

Hana Stúpalová, MSc.

Zuzana Červeňanská, MSc.

Michal Eliáš, MSc. Eng.

Renáta Masárová, PhD.

Michal Kopček, MSc. Eng.

Martin Juhás, PhD.

František Miksa, PhD.

Eduard Nemlaha, PhD.

Emília Vaculíková, MSc.

Maximilián Strémy, PhD.

Tomáš Bezák, PhD.

Michal Kebísek, PhD.

Iveta Markechová, PhD.

Miriam Iringová, PhD.

German Michalčonok, Assoc.Prof. PhD.

Oleg Palumbíny, Assoc.Prof. PhD.

Dušan Mudrončík, Professor, PhD.

Marta Urbaničková, Assoc.Prof. PhD.

Janette Kotianová, MSc.

Jozef Vaský, Assoc.Prof. PhD.

Andrej Eliáš, PhD.

Vladimír Liška, MSc.

Jaroslav Zeman, MSc. Eng.

Tomáš Haluška, MSc. Eng.

Gabriela Križanová, PhD.

Bohuslava Juhásová, PhD.

Mária Tóthová, MSc.

Lujza Hamplová, MSc.

Evgenija Pavlinová, MSc. Eng.

Róbert Vráběl, Assoc. Prof. PhD.

Pavol Božek, Assoc. Prof. PhD.

Pavol Závacký, MSc. Eng.

Igor Halenár, PhD.

Anna Juráková, MSc. Eng.

Róbert Pauliček, MSc. Eng.

Lilla Kremžárová, MSc.

Marcel Abas, PhD.

Pavol Bezák, PhD.

## MEMBERSHIP IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

### IIA – International Informatization Academy

Oliver Moravčík, Professor, PhD.

Anton Vrban, Professor, PhD.

### International Society for Geometry and Graphics

Mária Mišútová, Assoc. Prof. PhD.

### IUMB – International Union of Machine Builders

German Michalčonok, Assoc. Prof. PhD.

Peter Schreiber, Assoc. Prof. PhD.

Pavol Tanuška, Assoc. Prof. PhD.

Pavel Važan, Assoc. Prof. PhD.

### IACSIT – International Association of Computer Science and Information Technology

Oliver Moravčík, Professor, PhD.

Peter Schreiber, Assoc. Prof. PhD.

Pavol Tanuška, Assoc. Prof. PhD.

Pavel Važan, Assoc. Prof. PhD.

### European Platform of Women Scientists

Oliver Moravčík, Professor, PhD.

### International Association of Engineers

(IAENG), Hong Kong

Pavol Tanuška, Assoc. Prof. PhD.

## PUBLICATIONS

### Books

Božek, Pavol - Novotný, František - Horák, Marcel: Vacuum effectors for special robots application. - Izhevsk : Publishing House of Izhevsk State Technical University, 2010. - 69 p. - ISBN 978-5-7526-0445-4

Strémy, Maximilián: Combined discrete dynamic systems. - Trnava : AlumniPress, 2010. - 90 p. - e-publication. - ISBN 978-80-8096-113-8

Božek, Pavol: Elementary principles of robotized workplace creation on virtual scene. - Ostrava : Ámos, 2010. - 88 p. - ISBN 978-80-254-6154-9

Štollmann, Vladimír - Božek, Pavol: Special robots. - Ostrava : Ámos, 2010. - CD ROM (3, 28 AH). - ISBN 978-80-904523-8-1

Kebísek, Michal: Object oriented programming. - Trnava : Qintec s.r.o., 2010. - 120 p. - ISBN 978-80-969846-8-8

Masárová, Renáta: Mathematics I – indefinite integral. - Trnava : Qintec s.r.o., 2010. - 65 p. - ISBN 978-80-969846-2-6

Tanuška, Pavol: Managing of software projects. - Trnava : Qintec s.r.o., 2010. - 70 p. - ISBN 978-80-969846-5-7

Vaculíková, Ľudmila: Differential number of functions of more variables. - Trnava : Qintec s.r.o., 2010. - 89 p. - ISBN 978-80-969846-4-0

Važan, Pavel - Jurinová, J. - Jurovátá, Dominika: Algorithms and data structures I. - Trnava : Qintec s.r.o., 2010. - 115 p. - ISBN 978-80-969846-7-1

Božek, Pavol - Strmenská, Xénia: Machining construction. - Trnava : Tripsoft, 2010. - CD-ROM. - ISBN 978-80-89291-37-3

Červeňanská, Zuzana: Matrices and Determinants. - Trnava : Qintec s.r.o., 2010. - 62 p. - ISBN 978-80-969846-6-4

Kotianová, Janette: Algebraic equations – Horner scheme. - Trnava : Qintec s.r.o., 2010. - 61 p. - ISBN 978-80-969846-3-3

Mišútová, Mária - Markechová, Iveta - Stúpalová, Hana - Červeňanská, Zuzana - Hamplová, Lujza - Kotianová, Janette - Kremžárová, Lilla: Mathematics II via WinPlot and Maxima. Trnava : AlumniPress, 2010. - CD ROM, 114 p. - e-publication - ISBN 978-80-8096-127-5

Trubenová, Jaroslava - Masárová, Renáta - Červeňanský, Jaroslav: Mathematics I. - Trnava : Univerzita sv. Cyrila a Metoda v Trnave, 2010. - 176 p. - ISBN 978-80-8105-092-3

### Journals

Vráběl, Róbert: Singularly perturbed semilinear Neumann problem with non-normally hyperbolic critical manifold. In: Electronic Journal of Qualitative Theory of Differential Equations. - ISSN 1417-3875. - No. 9 (2010), pp. 1-11

Božek, Pavol - Barborák, Oto: Key benefits of virtual technology. In: Intellektual'nyje sistemy v proizvodstve. - ISSN 1813-7911. - Vol. 15, No. 1 (2010), pp. 115-119

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**INSTITUTE  
OF ENGINEERING  
PEDAGOGY  
AND HUMANITIES**







# INSTITUTE OF ENGINEERING PEDAGOGY AND HUMANITIES



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## Institute Departments

- Department of Engineering Pedagogy and Psychology
- Department of Humanities
- Department of Professional Language Communication
- Department of Physical Education and Sports

## Staff

- Professors: 4
- Assoc. Professors: 7
- Senior Lecturers: 26
- Research Fellows: 4
- PhD Students: 16

## Study programmes

- Personnel Work in Industrial Plants
- Teaching Practical Subjects within Engineering Majors
- Teaching Specific Engineering Subjects
- Didactics of Engineering Professional Subjects

## Research targets

- engineering pedagogy and psychology
- key competencies of students
- complementary teacher training and its experimental verification in educational practice
- humane science in technology
- foreign language curriculum improvement based on the needs analysis of the faculty graduates and undergraduates in the field of international professional communication
- investigation of methodological aspects of foreign language teaching and implementation of the research results into educational processes
- physical culture and fitness

## RESEARCH CHARACTERISTICS

The expertise goal of research activities of the Institute of Engineering Pedagogy and Humanities at FMST SUT stems from the profile of the Institute and faculty in the area of pedagogy, and it is in accordance with the long-term aim of the development of the Slovak University of Technology in Bratislava and it covers a full range of the Institute's educational activities. The content of the Institute's research activities is directed mainly at research in the area of humanities and social sciences with an emphasis on the development and innovation of methods and forms of education under the conditions of technical intelligence preparation. The specialty of the Institute's research lies in its division into two research areas:

Research Area No. 1: **"Pedagogy"**.

This area includes research assignments concerned with engineering pedagogy, preparation of high school teachers, advancement of personality, history of the technical educational system, body culture and language skill development.

Research Area No. 14: **"Engineering"**.

This area includes research assignments concerned with personnel work and preparation of e-learning courses for personnel officers. The Institute's research activities take the form of Scientific and scientific-pedagogical projects solved within the scope of selection and subsequent support by the grant agencies VEGA and KEGA, projects solved within the scope of selection and subsequent support by the grant agency APVV, and projects solved within the scope of international programs. The transfer of the outcomes of the Institute's research into practice can be accomplished by special and expert activities. Members of the Institute work out practical training at enterprises such as the Bohunice Nuclear Power Plant, VUJE Trnava, and ŽOS Trnava to the extent of their expertise.

The regular organization of scientific and expert colloquiums is an important part of the Institute's research and its outcome presentation. The Institute organizes the international scientific conference SCHOLA on a regular basis which takes place under the auspices of the International Society for Engineering Education – IGIP.

Student scholarly activities and the student scientific conference are a stable part of the Institute's care for talented and gifted students. The Institute regularly organizes the conference in the section of humanities and foreign languages.

## PROJECT OF TECHNOLOGY TRANSFER

The agency of the Ministry of Education of the Slovak Republic, administering the Structural Funds of the EU in the frame of the Operational Programme for Education, accepted a project led by Roman Hrmo, Assoc. Professor, PhD. called Teaching Skills Development of PhD Students at The Faculty of Materials Science and Technology in Trnava. The goals of the project are to develop teaching skills and to support academic growth of PhD stu-

dents of both full-time and part-time formats of their study. The goals will be reached by promotion of teaching skills of PhD students through direct educational activities and by coordination of their mobility.



## National Projects

**KEGA 3/6026/08**  
**(01.01.2008- 31.12.2010)**

Hrmo Roman, Assoc. Prof. PhD.

**Innovation study program teaching for technical profession subjects at FMST SUT**

The goal of the research team is evaluation and innovation in the study program "Teaching of technical professions subjects," which was accredited at FMST SUT. After three years in practise of the study program the researchers will put into practice the following innovation: an optimization profile of graduates in study program and application of the graduate on the labour market, optimization of proportions between lectures and exercises in the study program, reworking of the study materials and innovation of teaching methods.

**KEGA 3/6216/08**  
**(01.01.2008- 31.12.2010)**

Krpálková Krelová Katarína, PhD.

**Application of the subject "Guide to enterprise" in the study program "Teaching of technical profession subjects, II. Level" at FMST in Trnava**

The European Union stakes out the spirit of enterprise development at all school types and grades as one of the main goals in the education sphere. Education for enterprise is a new idea, the contents of which still are not stabilized. The suggested project solves this problem. The basis of the project is in the curriculum design of the subject "Guide to enterprise".

**KEGA 3/6253/08**  
**(01.01.2008- 31.12.2010)**

Milan Petráš, PhD.

**Aurel B. Stodola: The best among the greatest - Translation of correspondence**

The aim of the project is to prepare translation and written comments, and publish all available letters of A. Stodola (to his brothers and A. Einstein). Today there are 130 letters (1876-1943) available. We do not expect that this number will be increased. The letters to his brothers were kept. Some of them were

published by Ivan Stodola in the book *Náš strýko Aurel* (Our uncle Aurel, Bratislava, 1968). The letters will be translated and published with commentaries. The publication will include an introduction and it will be completed with iconographic material. It will provide a new perspective on the biography of this scientist, professor, technical designer, and thinker. They were not available till now.

**KEGA 035STU-4/2010**

Katarína Tináková, PhD.

**Models of project education at secondary vocational schools (SOŠ)**

The concept of education development in the Slovak Republic in the next 15-20 years highlights a need for school orientation modification from traditional provision of knowledge to methods of absorption and application of knowledge by students. Project education is based on solving of complex theoretical or practical problems with activity of students. The main aim of the project is to scan the contemporary state in project education at SOŠ in the Slovak Republic and form a structured educational text as a methodological material for teachers of technical subjects.

**VEGA 1/0185/08**  
**(01.01.2008- 31.12.2010)**

Marián Merica, Assoc. Prof. PhD.

**Optimization of motor programs as the basis for health improvement and the development of fitness and sport performance capacity.**

The research is on the ways to stop the increasing occurrence of some kinds of illnesses and health defects that top the health condition statistics of a wide population spectrum. Finding the possibilities for hypo-kinetic motion of the pre-school, school and university population on the basis of learned characteristics of their health condition, evaluation of their attitude to movement and to individual specific motor activities, and on the basis of their body and motor development analysis. In realisation of selected sports: swimming, tennis, athletics, football, body building, baseball and softball, searching for motor program optimisation with the aim of increasing the fitness and sport performance of our programs and with the constant attentiveness on the each individual's health.

## LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

- Bachelor Project
- Bachelor Thesis
- Biological Fundamentals of Evolution
- Biology of Teenagers
- Current Trends in Education
- Didactics of Engineering Subjects
- Didactics of Professional Training
- Diploma Project
- Diploma Thesis
- Dissertation project
- Dissertation project - methodology of pedagogical research
- Dissertation thesis
- Engineering Pedagogy
- English for Specific Purposes
- English Language
- Ethics
- European integration processes
- Fundamentals of Communication
- Fundamentals of Ethics
- Fundamentals of Law Education
- Fundamentals of Law Education Recovery
- Fundamentals of Law for Technologists
- Fundamentals of Law for Technologists and Managers
- Fundamentals of Philosophy, Methodology and Logic
- General Economic Theory
- German for Specific Purposes
- Handling Labour Conflicts
- Handling Work Problems
- History of Economic Theories
- History of Science and Technology
- History of Technology and Vocational Education
- ICT in Education
- Industrial Psychology
- Industrial Sociology
- Introduction to Research Methodology
- Introduction to Scientific Work
- Introduction to University Study
- Management of Secondary School
- Master Thesis
- Material Didactics Resources
- Mental Hygiene
- Outstanding Personalities of Slovak Science
- Pedagogical Practice
- Pedagogy
- Philosophy of Technology
- Physical Education and Sports - optional
- Physical Education and Training
- Practice
- Production Practice
- Prognostics
- Psychology
- Psychology in Managerial Jobs
- Psychology of Health
- Psychology of Occupational Safety
- Recreational Physical Education and Sports
- Research
- Selected Chapters of Andragogics
- Selected Chapters of Evolutionary and General Psychology
- Selected Chapters of General and Evolutionary Psychology
- Selected Chapters of Labour Psychology
- Selected Chapters of Pedagogical Psychology
- Selected Chapters of Pedagogy
- Selected Chapters of Social Psychology
- Semester Project
- Seminar on Pedagogical Practice

- Slovak Language for foreigners
- Social and Personal Counselling
- Social Ecology
- Social Communication
- Social Policy
- Sociology
- Sociology of Education
- Sociology of Management
- Sociology of Work
- Synergetic
- Theory of Education
- Total Quality Management
- Winter training camp for students
- Leading to entrepreneurship

## GRADUATE THESES

### Bachelor Theses

#### Adamkovičová, M.:

Realizing the selection of employees in the firm Enviral, a.s., Leopoldov

#### Ághová, J.:

Evaluation of lighting conditions in PLASTED, s.r.o.

#### Blašková, Z.:

Evaluation of the labour environment and corporate culture

#### Blažková, D.:

Placement and adaptation of company employees

#### Bohiňáková, V.:

Improvement of motivation

#### Bordáč, P.:

Education of the staff in a company

#### Bračiková, M.:

The evaluation of employees in a company

#### Bubáková, M.:

Analysis of communication in a company

#### Bučková, I.:

Motivational incentives to employees

#### Bulková, L.:

The relationship of corporate training and corporate culture

#### Csongrádyová, G.:

The motivation incentives of employees

#### Čapková, M.:

Motivation stimuli of the employees of the firm Power-One, Ltd.

#### Čellárová, E.:

The education of employees in a company as part of personal work

#### Červenka, Z.:

The sense of motivation of students in special training

#### Danišovičová, Z.:

Analysis of communication at the workplace

#### Dobrovický, P.:

Education of employees in the company as a part of personnel policy

#### Dorušincová, A.:

Anti-drug and profilax education

#### Dulanská, S.:

The social security system and keeping people in a company

#### Durec, P.:

Prosociality in teaching on the secondary school

#### Ďuricová, K.:

Training of employees

#### Dvorská, M.:

The system of evaluation and compensation of employees in the company Duslo Inc. Sala

#### Dzimková, M.:

Improving the system of motivation in the company MPC CESSI, a. s.

#### Endresová, P.:

The significance of education for the human resources management

#### Franková, Z.:

The suggestion of a system of recruiting in the company ZF Boge Elastmetall Slovakia, a. s.

#### Gašparíková, P.:

Interview in Samsung Electronics Slovakia, s.r.o.

#### Göndörövá, K.:

The job interview

#### Grosmanová, V.:

Analysis of communication in the Delta Electronics (Slovakia) Ltd.

#### Guzmická, M.:

The Relation Between Staff Development and Corporate Culture

#### Habalová, V.:

Corporate education and creativity

#### Hegedúšová, N.:

Proposing a System of Recruitment at the Company FREMACH TRNAVA, s.r.o.

#### Hlavatá, M.:

Draft measures to improve the system of education in PSA Peugeot Citroën Slovakia

#### Hodálová, J.:

Design of an acquisition and selection system for the company Sloveca, LLC, in Bratislava

#### Holásková, M.:

The proposal of arrangements for improving the system to attract and broaden the field of prospective employees in Trans-Motocentrum, s.r.o., Boleráz

#### Hupková, A.:

Education and development of employees in BVS, p. l. c., in Bratislava

#### Hurtová, I.:

Motivational incentives to employees in the business education on the premi

#### Chrenková, K.:

Training of employees in the company

#### Ivanková, H.:

Ethics and law in business practice

#### Jakubiecová, S.:

Proposal for Improvement of Employee Education and Development System in MANDAT CONSULTING, k.s, Bratislava

#### Janková, M.:

Addressing the selection of employees in the company

#### Jánska, S.:

Advertising, choice and undertaking of employees in Považska cement factory

#### Jurča, M.:

Application of teaching aids in vocational training of SOŠ strojnícka in Skalica

#### Jurigová, B.:

SOLUTION recruitment, selection and recruitment in ZTS CABLE COMPANY, Ltd. In Dubnica

#### Jurkovič, D.:

Design of teaching aid

#### Jurkovičová, V.:

Recruitment, selection of employees and admission to occupation in the company Slovokord, Inc.

#### Kirínovičová, M.:

The system of the personnel work in a selected business enterprise

#### Klímová, D.:

Educational problems of solution pupils on vocational training



- Ključiar, R.:**  
Instruments of corporate culture in the company COLUMBA, s r.o.
- Knap, M.:**  
Personal development of employees, career and creation
- Kocúriková, D.:**  
Personal development of employees, career and its creation
- Kopecská, H.:**  
Relations in the workplace
- Kotvanová, K.:**  
Corporate education
- Kovačičová, K.:**  
Recruitment, selection, and receiving of employees in a chosen company
- Kováčiková, L.:**  
Analysis of communication in the workplace
- Koyšová, D.:**  
Educational system of employees in the Cement plant Ladce
- Krajná, Z.:**  
Improving the motivation system in company
- Krčová, M.:**  
The history of the Grammar School of Ján Hollý
- Krištofiková, L.:**  
The personnel work system in a company
- Križanová, N.:**  
Proposal of arrangements for improvement of educational and development system of employees in Continental Matador Truck Tires s.r.o., Púchov
- Kubičková, S.:**  
Eurofunds and its usage in solving unemployment
- Kucharovičová, J.:**  
Motivation stimuli for employees
- Kupčíhová, N.:**  
Employee education and employee development
- Kupkovičová, J.:**  
Culture of Company Training in the Slovak Gas
- Kurpelová, P.:**  
Motivational Stimulation of Personnel
- Labuda, P.:**  
Key competencies of master training at the Transport Academy in Žilina.
- Labudová, L.:**  
Application of humanizational aspects of learning process
- Lackovičová, L.:**  
Staff evaluation of Town Office
- Lidajová, K.:**  
Motivation of students in vocational training
- Lizancová, L.:**  
Suggestion of measures to improve the education system in the Lindab, a. s.
- Macíková, A.:**  
Adaptation and deployment of staff
- Macková, E.:**  
Ethics in business
- Mačák, T.:**  
Using creativity in practical training on the secondary technical school
- Madarová, M.:**  
The career as a part of human resource development in ADAJA Ltd.
- Macháčová, A.:**  
Illustrative use of teaching methods for professional training
- Majbová, A.:**  
Implementation of e-learning into business education
- Majtánová, L.:**  
Analysis of unemployment in the region of Trenčín
- Malchová, I.:**  
Analysis of communication in the workplace
- Malková, B.:**  
Proposal for improvement of rewarding employees
- Malovcová, L.:**  
Personality of manager in enterprise
- Mášíková Paulinová, M.:**  
Opportunities to motivate pupils in vocational training of Súkromná hotelová akadémia in Bratislava
- Melišíková, H.:**  
Analysis of progress on joblessness in the district Galanta
- Mihalčinová S.:**  
A draft solution for improvement of human resources usage in SYPAZ, spol. s r. o. company
- Michalíková, M.:**  
Active labor market policy in the region of Považská Bystrica
- Milota, M.:**  
Self-consciousness and its importance in the work of the IOC
- Mišáková, S.:**  
Personal evaluation
- Morávková, H.:**  
Education employees in the company OMS, s.r.o. Dojč
- Mordáčiková, J.:**  
A proposal for recruitment and shortlisting of employees in SPERIAN PROTECTION Slovakia, s.r.o
- Nikmonová, L.:**  
Personal career development of employees in the company
- Nováková, P.:**  
Training and development staff in the company PSA Peugeot Citroen Slovakia
- Oboňová, J.:**  
Testing and evaluation of pupils in vocational training of SOŠ in Trenčín
- Pajtinková, J.:**  
The proposal for measures to improve the incentive system of employees in ZVS - ENCO, JOINT STOCK COMPANY, Dubnica nad Vahom
- Petruš, P.:**  
Motivation staff incentives
- Podmanická, J.:**  
Ethical aspects of commanding man-power
- Poláková, A.:**  
Suggestion for a system of getting and selecting employees
- Poláková, B.:**  
Suggestion how to improve education and development of employees in PROTHERM PRODUCTION s.r.o., Skalica
- Prostínák, M.:**  
The Education of Employees in the Company
- Prostínáková, D.:**  
Personality of the principal
- Pšeneková, M.:**  
Employee Education
- Rákocziová, M.:**  
The Analysis of the satisfaction with the working conditions.
- Repková, E.:**  
Personal growth of employees, Career and its formation
- Rusnák, M.:**  
Selection procedures
- Samková, M.:**  
The system of personnel work in the plant
- Slaninka, L.:**  
Communication competencies in the work of trainer in vocational education
- Slimáková, L.:**  
Recruiting New Employees in ETI ELB, s. r. o. Báhoň
- Sopuch, J.:**  
A teaching tool for the work of secondary school teachers
- Spišáková, A.:**  
The system and organization of human resources in the enterprise
- Sporímska, G.:**  
Employee stabilization and its significance for enterprise
- Stegmannová, J.:**  
Improvement of the system of employee motivation in company
- Šipkovská, J.:**  
Personality and work of the manager
- Školárová, Z.:**  
Employee Training in Swedwood Slovakia, Ltd., o.z. Spartan
- Škopová, J.:**  
Improvements in the system of motivation in ZF SACHS Slovakia, a. s. Trnava
- Škulibová, J.:**  
Personality and role of the manager
- Šmehýlová, Z.:**  
The allocation and the adaptability of the employees
- Šmotlák, J.:**  
The reward system proposal for employees in Purgina Ltd.
- Šperková, K.:**  
Deployment and Adaptation of employees in Enterprise
- Štefancová, Z.:**  
Analysis development of unemployment in the selected region
- Števlíková, A.:**  
Analysis of unemployment in the Trnava region
- Štulajterová, L.:**  
Motivation of employees in the organization of Technical services Brezno
- Šurinová, M.:**  
Use of Personnel Management to improve the status of DECODOM, s.r.o.
- Švantnerová, M.:**  
Recruitment and shortlisting of employees in organisation DNH, s.r.o. Palárikovo
- Tarková, O.:**  
Proposal for an employee educational system in the company
- Tejová, M.:**  
Ethics personnel management in the enterprise
- Timoránská, I.:**  
New communication forms, communication technologies on workplace
- Tomanová, I.:**  
Value orientation of secondary school pupils.
- Trávníčková, E.:**  
The meaning of computer technology in personal work management
- Tulisová, Z.:**  
Deployment and adaptation of employees in the company
- Tvarošková, L.:**  
Personality and mental health
- Uhlíková, J.:**  
Ethics and Law in Business Practice
- Uličná, J.:**  
Recruitment, selection and employment of new employees



**Urbanová, L.:**

Corporate identity as a part of corporate culture

**Vajdová, K.:**

System and organization of human resources in food factory

**Valachovičová, S.:**

A Proposal of a more effective system of recruitment and shortlisting of employees in a company

**Vicianová, S.:**

Staff Training and Development in Manz Automation Slovakia, s. r. o. Nové Mesto nad Váhom

**Zacková, P.:**

Analysis of development of human resources in company

**Zadubanová, L.:**

System of employee motivation enhancement in ETI ELB, s.r.o. Báhoň

**Zacharová, E.:**

The code of ethics as a distinguished element of corporate culture in JAVYS, a. s.

**Zelenáková, M.:**

Analysis of the development of unemployment in the region Myjava

**Žilinská, J.:**

Staff recruitment solution in a company

**Master Theses**
**Adamcová, K.:**

Preparation of the teacher for teaching

**Bačíková, E.:**

Leisure time and its importance in the life of adolescents

**Bašistová, M.:**

The school environment

**Bečková, E.:**

Leisure time of high school juveniles and its utilization

**Belková, M.:**

Personality of Teacher Special Subject

**Bellová, B.:**

Quality of Pupil Life at School

**Bielik, P.:**

Bullying in schools

**Biháryová, L.:**

Problem of Bullying at Vocational Schools

**Bittnerová, Z.:**

Secondary school students and drugs

**Blašková, M.:**

School and classroom environment

**Blatnický, M.:**

Leisure time activities and interests of growing up teenagers

**Bokorová, L.:**

Education of employees in the factory STAKOTRA MANUFACTURING s. r. o. Piešťany

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Staff training in the production company and its evaluation

**Brdiar, P.:**

Modernization of the teaching by way of ICT and internet

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Current issues of corporate training of Railways

**Buchelová, Z.:**

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**Cifrová, M.:**

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**Civáň, Z.:**

The value system of secondary school students

**Csuportová, L.:**

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**Černá, A.:**

The detection and prevention of truancy in the special school

**Červeňáková, I.:**

Values and relations as a part of education

**Čikošová, D.:**

Leisure Time and its role in the lives of youth

**Ďurčanská, L.:**

The development of the secondary technical education system in Slovakia since 1976

**Ďurkechová, A.:**

Students' life problems

**Dyntárová, Z.:**

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**Džibelová, A.:**

Testing and evaluation of students in secondary vocational schools

**Fluxová, P.:**

Training of unemployed graduates of professional schools and their application in practice

**Fodor, M.:**

The problem of bullying in schools

**Fodorová, I.:**

School inspections and the evaluation of the teaching

**Gabajová, A.:**

The Use of Graduates in the Labour Market

**Gagová, A.:**

The requests of the labour market for a change of curriculum of content

**Gjablová, M.:**

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**Golierová, J.:**

Criminality of secondary school juveniles

**Gombaszögiová, I.:**

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**Guldanová, J.:**

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**Haladej, J.:**

Environmental education at secondary schools

**Hanzel, D.:**

Problems with student adaptation to secondary school

**Hašan, M.:**

Outline teaching aid - a thematic board

**Heickerová, V.:**

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**Heldová, L.:**

Self-reflection of teacher at vocational school

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Ethics evaluation and classification on secondary schools

**Hilkovičová, A.:**

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**Hlohincová, M.:**

Students' relation to their own health in the question of correct diet

**Horváthová, J.:**

The importance of teaching technology in education

**Hreščák, P.:**

Problems that Students Have with Adapting to the University Environment

**Husárová, V.:**

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**Chocholáček, R.:**

Influence of family background on student's fruitfulness at school

**Chovancová, M.:**

Endurance situation and ways of managing situations by secondary school youth

**Ilavský, P.:**

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**Jakubčíková, K.:**

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Preferred way of life and present-day high schools graduates' values

**Jendrichovský, L.:**

Project teaching of technical vocational subjects

**Kačincová, M.:**

Contemporary trends in evaluation and classification of students at secondary schools

**Kapecová, M.:**

Secondary school students attitudes towards disabled individuals and their integration

**Karvašová, I.:**

The concept and creation of a literary teaching aid

**Keresztényová, D.:**

Free time and its roll in the life of youth

**Klúcsik, B.:**

School systems – specialized preparation in several European countries (comparison)

**Klúcsik, L.:**

Material means in education

**Kmet'ová, D.:**

Design of the educational course for instructors in Reference chemical laboratory in Zemianske Kostol'any

**Kočický, R.:**

Development spiritual intelligence

**Kohutanič, A.:**

Monitoring the influence of selected factors of working environment in a practical training at the selected school workshops

**Kochan, J.:**

Social consequences of globalization

**Kol', J.:**

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**Kollárová, J.:**

Perception and assessment of risk of students in Secondary schools

**Kollárová, M.:**

Basic principles of modern management of high school

**Kopecká, L.:**

Self-reflection of the teacher

**Kopecká, K.:**

Education to human rights and problematics of multiculturalism

**Kopecká, R.:**

The class climate and its importance in the creative-humanistic education

**Kormanec, V.:**

Teaching aid of transmission DSG

**Kotúč, R.:**

Family as a primary agent in education of pupils

**Kotyrová, E.:**

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**Kovárová, I.:**

Motivation of Student's Learning at Secondary Schools

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Problem of bullying in schools
- Krasková, R.:**  
Moving activity as a way of optimizing mental and psysical functions in ageing process
- Krchnák, L.:**  
Youth crime versus youth bullying in schools
- Kruppová, L.:**  
Motion visual teaching aids
- Krušina, M.:**  
Suggestion and making a teaching aid
- Kukučková, I.:**  
Healthy balance diet, drinking regime and mental hygiene of students
- Kundrátová, A.:**  
Working in professional education courses at a vocational training school
- Kvietková, A.:**  
Forms of bullying and maltreatment of pupils at schools
- Kvietková, I.:**  
Enterprise school-boy on SOŠ
- Kyjac, M.:**  
Family as a primary factor in the education of a pupil
- Lakušová, V.:**  
The family as a primary factor in the education of students of the secondary school
- Lališová, D.:**  
The education of seniors and its evaluation
- Lehocký, A.:**  
Making a Guide for Civil Protection of Teachers in secondary Schools
- Lenková, S.:**  
The lifestyle of secondary school youths
- Ľuptovčíaková, E.:**  
The Use of motion, leisure activities of students at Vocational School in Valaska
- Makovník, M.:**  
A Personality of a Specialised Subjects Teacher
- Malovcová, I.:**  
Specification of the educational influence and education of convicted men at the prison care
- Marek, P.:**  
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- Margala, D.:**  
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- Maťuchová, J.:**  
Communication in school practice
- Mikerová, A.:**  
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- Miklošovič, L.:**  
Verification and valuation at secondary schools
- Mikúšek, P.:**  
Identification of cross-curricular activities
- Mokrá, E.:**  
Healthy lifestyle of students at secondary schools
- Namčoková, D.:**  
Lifestyle adolescents
- Nepšínská, M.:**  
The cooperation of family and school to high school
- Nestarec, S.:**  
Interdisciplinary relations in the teaching of special subjects and subject Special training
- Neupauer, P.:**  
Motion visual teaching aids
- Nováková, A.:**  
Students' terms to own health in the question of the correct nutrition
- Ondrejčíková, R.:**  
Graduate Job Market: Opportunities and employment
- Pagáč, M.:**  
Assertiveness in communication of students at secondary school
- Pagáčová, A.:**  
Development of vocational school system in Slovakia: The History of the Forestry school in Liptovský Hrádok
- Paška, M.:**  
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- Patková, T.:**  
Possibility of developing spiritual intelligence
- Paulíková, M.:**  
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- Paulovič, T.:**  
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- Pavelková, L.:**  
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- Pavlík, P.:**  
Vocational guidance as a value-added school
- Pavlovič, A.:**  
Cooperation between families and schools on high school
- Pavlovičová, J.:**  
Model of a lesson on the subject „Machine technology“ using Microsoft PowerPoint
- Peresléný, I.:**  
Application of graduates in the labour market
- Petráš, S.:**  
Environmental education and its implementation within secondary schools
- Podařil, M.:**  
Creative students on upper secondary school from the teachers perspective
- Polák, E.:**  
Crime and its causes in secondary schools
- Polčíková, M.:**  
Upbringing and education of handicapped and psychosocially disabled pupils
- Potočárová, V.:**  
Creation and assessment of didactic tests in the subject of Mechanics
- Rošetzký, M.:**  
Verbal aggression high school students in the learning process
- Rozenbergerová, Z.:**  
Motivation of students at Secondary school in specialized subjects
- Rybáriková, M.:**  
Tools supporting performance of graduates in the labour market
- Salcerová, K.:**  
Examination and evaluation in secondary vocational schools
- Sáraz, P.:**  
Atmosphere of the school and class
- Sedláková, M.:**  
Influence of Class Climate to the Motivation of Pupils at Secondary Schools
- Schwarz, R.:**  
The issue of drug use among high school youth
- Sill, A.:**  
The use of material resources for teaching secondary vocational schools
- Slemenský D.:**  
Assertiveness of teachers in the classroom.
- Soltysová, S.:**  
The family as a primary factor in the education of a pupil
- Strapatá, Z.:**  
Attitudes of high school students to affected individuals and their integration
- Súcky, R.:**  
The modern methods of teaching
- Sysel, Š.:**  
School quality
- Szalatnyai, G.:**  
The comparison of school system in Slovak Republic and Hungary with attention to Secondary Technical Schools
- Šebej, P.:**  
Use of ICT in education in vocational technical courses at professional schools
- Šedivý, P.:**  
Social pathology manifestations among elementary school students
- Šimšaj, V.:**  
Conflicts in relationship between vocational education teacher/student and their solution
- Šmatláková, R.:**  
The phenomenon of tyranny and neglect of children in school surroundings
- Štulrajterová, M.:**  
Human rights education and multicultural education
- Štúr, M.:**  
Keeping students in secondary schools to entrepreneurship
- Tirol, L.:**  
Application of an educational widget as a tool on improvement of learning process
- Tóthová, H.:**  
Manifestations of aggression in secondary school students
- Tretinárová, T.:**  
The environment, its protection and formation
- Trpková, G.:**  
Evaluation of the use of motivation by students in secondary vocational school
- Vandra, S.:**  
Rational diet, drinking schedule and students psychohygiene.
- Vaňová, J.:**  
Application of didactic principles in the teaching of general and vocational subjects
- Višňová, A.:**  
An electronic presentation in teaching and student's observation
- Vítek, M.:**  
Appreciation scholar of the SOŠ
- Vosátková, N.:**  
The lifestyle of university students
- Zajac, P.:**  
Information and communication technologies in Secondary Vocational School Tlmače
- Zezula, M.:**  
Freetime activities of students of Universities

#### PhD Thesis

- Balažovjeh, M.:**  
Development of pedagogic-didactical competence of teachers of professional subjects through microeducation analysis
- Gergelová, E.:**  
Lifelong learning and learning organization
- Koňušíková, M.:**  
Creation and effectiveness of educational texts for directed self learning on secondary technical school
- Prachar, J.:**  
Effectiveness of teaching physics project
- Fehér, T.:**  
Didactic modification of a text on the subject Theory of machining

**Richtáriková, D.:**

Supporting education at the Faculty of Machining SUT in Bratislava in the subject of mathematics

**Čížová, M.:**

Efficiency of cooperative education in the subject Technology of assembly and repairs

**Ľubica Mrvová:**

Design of evaluation methods of economic efficiency of environmental investments in activity of EMS in MSP SR.

**VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS**

Employee	Country of visit
Tkáč Lukáš, MSc.	Ireland
Strakoš Jozef, PhD.	Norway
Kováč Karol, MSc.	Norway
Kvasnica Ondrej, MSc. Eng.	Italy
Sablík Jozef, Professor, PhD.	Czech Republic
Mironovová Emília, MSc.	USA
Krpáľková-Krelová Katarína, PhD.	USA
Fedič Dušan, PhD.	USA
Chmelíková Gabriela, PhD.	USA
Hrmo Roman, Assoc. Prof. PhD.	Estonia
Bilčík Alexander, PhD.	Estónsko
Odlerová Eva, Assoc. Prof. PhD.	Russia
Krištofiaková Lucia, PhD.	Russia
Kadnár Jozef, MSc. Eng.	Latvia
Hrmo Roman, Assoc. Prof. PhD.	Austria
Lederleitner Drahomír	Austria

**MEMBERSHIP IN SLOVAK PROFESSIONAL ORGANISATIONS**

**Slovak Pedagogy Society at Slovak Academy of Sciences**

Katarína Krpáľková Krelová, PhD.  
Katarína Tináková, PhD.  
Ľubomír Holkovič, PhD.  
Roman Hrmo, Assoc. Prof. PhD.  
Viliam Končal, Assoc. Prof. PhD.  
Ing. Jan Kostelník, Assoc. Prof. PhD.

**Slovak Swimming Federation**

Rastislav Hlavatý, PhD.

**Physical Education Union SUT Trnava**

Rastislav Hlavatý, PhD.  
Marián Merica, Assoc. Prof. PhD.

**Swimming Club SUT Trnava**

Rastislav Hlavatý, PhD.

**Association for History of Science and Technology**

Katarína Tináková, PhD.  
Roman Hrmo, Assoc. Prof. PhD.

**Slovak Scientific Society for Physical Education and Sport**

Soňa Novotná, PhD.  
Rastislav Hlavatý, PhD.  
Marián Merica, Assoc. Prof. PhD.

**Information Society for Education ZSVTS**

Katarína Tináková, PhD.  
Katarína Krpáľková Krelová, PhD.  
Roman Hrmo, Assoc. Prof. PhD.  
Jan Kostelník, Assoc. Prof. PhD.  
Eva Tóblová, PhD.

**ASR Association of Russian Teachers in Slovakia**

Dagmar Rusková, PhD.

**SUNG – Association of German Teachers in Slovakia**

Anna Reháková, PhD.  
Dušan Fedič, PhD.

**Territorial Board of Education TTSK**

Roman Hrmo, Assoc. Prof. PhD.

**Scientific Commission for Permission to Defend Dissertation Theses in the Field of Study – Sports Kinanthropology**

Marián Merica, Assoc. Prof. PhD.

**Association of Process Oriented Psychotherapy**

Silvester Sawicki, PhD.

**Association of School Psychologists**

Silvester Sawicki, PhD.

**MEMBERSHIP IN INTERNATIONAL PROFESSIONAL ORGANISATIONS**

**Internationale Gesellschaft für Ingenieurpädagogik – IGIP(International Society of Engineering Pedagogy)**

Roman Hrmo, Assoc. Prof. PhD.  
Katarína Tináková, PhD.  
Katarína Krpáľková Krelová, PhD.  
Lucia Krištofiaková, PhD.  
Eva Tóblová, PhD.

**CASAJC – Czech and Slovak Association of Foreign Language University Teachers**

Dagmar Rusková, PhD.  
Emília Mironovová, MSc.  
Dušan Fedič, PhD.  
Gabriela Chmelíková, PhD.  
Anna Reháková, PhD.  
Jana Green, MSc.

**National consortium for the European network of reference and expertise in vocational education and training, Slovakia-CEDEFOP**

Roman Hrmo, Assoc. Prof. PhD.  
Katarína Krpáľková Krelová, PhD.  
Silvester Sawicki, PhD.

**International of Sport kinetics**

Marián Merica, Assoc. Prof. PhD.

**The Editorial Board of Research Journal Studia Sportiva of the Faculty of Sports Studies Masaryk University in Brno**

Marián Merica, Assoc. Prof. PhD.

**PUBLICATIONS**

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Gálik, Karol: Monitoring the changes in the aerobic endurance state of a tennis player during the season. In: Proceedings of the Joint International IGIP-SEFI : Annual Conference 2010. Diversity unifies - Diversity in Engineering Education, 19th – 22nd September 2010, Trnava, Slovakia. - Brussel : SEFI, 2010. - ISBN 978-2-87352-003-8 abstract

Mrvová, Ľubica: Key competencies directed towards a quality functioning society.

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Petráš, Milan - Reháková, Anna - Green rod. Česneková, Jana - Fedič, Dušan - Píša, Maroš: Progress towards the pedagogical and scientific zenith. In: Proceedings of the Joint International IGIP-SEFI : Annual Conference 2010. Diversity unifies - Diversity in Engineering Education, 19th – 22nd September 2010, Trnava, Slovakia. - Brussel : SEFI, 2010. - ISBN 978-2-87352-003-8 abstract

Sawicki, Silvester: The need for spiritual dimension at university education of engineering and humanitarian type. In: Proceedings of the Joint International IGIP-SEFI : Annual Conference 2010. Diversity unifies - Diversity in Engineering Education, 19th – 22nd September 2010, Trnava, Slovakia. - Brussel : SEFI, 2010. - ISBN 978-2-87352-003-8 abstract

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Munka, Karol - Novota, Marián - Varga, Stanislav - Karácsonyová, Monika: Model tests of the influence of water aeration to reduce its aggressivity for different types of pipe materials in VDJ Jabloňové. In: Voda Zlín 2010. - Hranice : Voding, 2010. - ISBN 978-80-254-6368-0. - pp. 57-62







# DIVISIONS





# DIVISION OF ACADEMIC ACTIVITIES

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## Departments

- Registrar's Department
- Department of Research and International Relations

## Staff

- Registrar's Department: 9
- Department of Research and International Relations: 4

## The Spheres of Influence of the Division of Academic Affairs

1. The Division of Academic Affairs 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 Affairs has its own spheres of influence:
  - a) recording of the student life cycle and related activities for all three study grades,
  - b) processing and administration of admission procedures in all three study grades,
  - c) publicity of materials directed to applicants for study,
  - d) processing of a complex agenda for motivation and social scholarships,
  - e) recording of research projects and grant activities,
  - f) organizing of business and study travel for the faculty employees and students abroad,
  - g) organization 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) organization of growth in the complex scientific academic qualification of the faculty employees – including habilitation and inauguration procedures,
  - i) organizing and administration of agendas related to activity of commissions for defense of dissertation work, habilitation and inauguration commissions,
  - j) provision of a complex agenda for meetings of the Scientific Board,
  - k) organization and administration of the accreditation process and implementation of a system of quality,
  - l) administration of agendas connected with awards for faculty and memberships in scientific communities,
  - m) organization of faculty academic ceremonies.

## PROJECTS OF THE DIVISION OF ACADEMIC AFFAIRS:

Head of the Division Jana Štefánková, MSc. Eng. contributes to the project solution: Faculty of Materials Science and Technology Slovak University of Technology in Diversity: **Improving Gender Diversity Management in Materials Research Institutions.**

Head of the Division Jana Štefánková, MSc. Eng. contributes on the project **Knowledge regulated system of observation tools of graduates' careers in the integration process to the EU.**

## ACTIVITIES OF THE DIVISION OF ACADEMIC AFFAIRS IN YEAR 2010:

- Organisation of the International Doctoral Seminar 2010
- Organising of the Joint International IGIP-SEFI Annual Conference 2010
- Organisation of the Opening Day at FMST SUT
- Organisation of presentation events and materials of study
- Participation at the trade fair of education
- Organisation of the survey/polls of satisfaction
- Organisation of the New-year's meeting of employees
- Year-long care of the web page- information for faculty and students
- Care of the academic information system AIS



## PUBLICATIONS:

**Štefánková, Jana** - Cagáňová, Dagmar - Moravčík, Oliver: Promoting Gender Diversity Research in Slovakia within 7th Framework Programme. - In: 21st EAEEIE (European Association for Education in Electrical and Information Engineering) Annual Conference, June 28-30 2010 Palanga, Lithuania, ISBN 978-9955-25-826-1. In: Electronics and electrical engineering. - ISSN 1392-1215. - No. 6(102) (2010), s. 59-62

Moravčík, Oliver - **Štefánková, Jana** - Cagáňová, Dagmar: The Faculty of Materials Science and Technology in Trnava on the Way to Excellency. In: Proceedings of 11th European Conference on Knowledge Management (ECKM 2010) : Universidade Lusíada de Vila Nova de Famalicao, Portugal, 2-3 September 2010. - Famalicao : Academic publishing International, 2010. - ISBN 978-1-906638-71-9. - S. 702-710

Svetský, Štefan - Moravčík, Oliver - Sobrino, Daynier Rolando Delgado - **Štefánková, Jana**: The Implementation of the Personalised Approach for Technology Enhanced Learning. In: WCECS 2010 : Proceedings of the World Congress on Engineering and Computer Science 2010. Volume I. San Francisco, USA, 20-22 October, 2010. - Hong Kong : International Association of Engineers, 2010. - ISBN 978-988-17012-0-6. - S. 321-323

Cagáňová, Dagmar - **Štefánková, Jana** - Šujanová, Jana: Improving gender awareness in the period of an economic crisis. In: Proceedings of the Joint International IGIP-SEFI : Annual Conference 2010. Diversity unifies - Diversity in Engineering Education, 19th – 22nd September 2010, Trnava, Slovakia. - Brussels : SEFI, 2010. - ISBN 978-2-87352-003-8

Odlerová, Eva - Cagáňová, Dagmar - **Štefánková, Jana**: Ecological rationality and the priorities of an environmental politics in the period of globalization. In: Proceedings of the Joint International IGIP-SEFI : Annual Conference 2010. Diversity unifies - Diversity in Engineering Education, 19th – 22nd September 2010, Trnava, Slovakia. - Brussel : SEFI, 2010. - ISBN 978-2-87352-003-8

Šujanová, Jana - Cagáňová, Dagmar - **Štefánková, Jana**: Future Research Areas for a Better Understanding of Women Participating in Research and Science in Top Management Positions. In: Beyond the leaky pipeline. Challenges for research on gender and science : Final conference of the study "Meta-analysis of gender and science research". 19th-20th October 2010, Brussels, Belgium. - Brussels, 2010. - S. 31-34





# DIVISION OF KNOWLEDGE MANAGEMENT

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## Departments

- Academic Library
- Publishing House
- Department of Public Relations

## Staff

- Academic Library: 7
- Publishing House: 2
- Department of Public Relations: 2

## Spheres of Influence of the Division of Knowledge Management

1. The Division of Knowledge Management is the technical-administrative and service unit of the faculty which provides faculty activities and functions in the field of the academic library, publishing and public relations.
2. The Division of Knowledge Management is responsible for:
  - a) processing and functions of the academic library which:
    - is the research-information, bibliographic, coordination and advisory workplace of the faculty,
    - stores and registers qualification theses,
    - is a workplace for central evidence of faculty publications and their references,
    - provides and processes information funds according to the faculty profile and offers bibliographic-information services on the basis of user categorization,
    - administrates bibliographic- information databases related to the academic activity of the faculty and participates by creating and accessing file catalogues,
    - fulfills the function of a specialized research library for the specific fields of the faculty,
  - b) operating the faculty publisher according to the accepted articles which provide editorial activity of the faculty,
  - c) public relations of the faculty,
  - d) contacts of the faculty to the foundation Alumni.

## PROJECTS OF THE DIVISION OF KNOWLEDGE MANAGEMENT IN YEAR 2010:

The project **Center of knowledge organisation of intellectual property**, led by Kvetoslava Rešetová, PhD., was approved in the frame of the call of the agency Ministry of Education Slovak Republic - for Operation program Research.

The aims of the project is the creation of a center with the functions of a virtual library and digital archive, complex care of rights of intellectual properties, expert research and education workplace for intellectual property. The project will be the result of globalisation trends for knowledge faculty as a knowledge society center. It will be a model of knowledge management which is defined on the basis of information surveys, information behaviour, knowledge organisation, interaction and access to information.



PRINCIPLE INVESTIGATOR:  
**Kvetoslava Rešetová, PhD.**

The project **Knowledge regulated system of observation tools of graduates' career in the integration process to the EU** led by Kvetoslava Rešetová, PhD. was approved in the frame of a call by the agency Ministry of Education Slovak Republic for Operation program Education.

Strategic aim of the project is focused on the support of quality increase and flexibility of the tools for observation of graduates' careers as an output of adaptation of the education system to the needs of a knowledge society via innovation forms of development of faculty intellectual capital. It is based on the long-term aim to increase responsibility of knowledge transfer and development of a knowledge society. The quality of intellectual and knowledge institution potential, intensity of its development is connected with knowledge management. The transfer of knowledge presents a revision of the position of knowledge in the organisational value hierarchy. The project presents educational integrity - innovations and knowledge.



PRINCIPLE INVESTIGATOR:  
**Kvetoslava Rešetová, PhD.**

## ACTIVITIES OF THE DIVISION OF KNOWLEDGE MANAGEMENT IN YEAR 2010:

- organising the new-year meeting of employees
- opening the Technological museum
- organising of the Day of the Faculty of Materials Science and Technology
- all year long exposition of posters and gallery of the faculty
- all year long management of web page of the faculty
- organising of participation on trade fair Industry Expo Bratislava
- organising of hall opening of The Centre of Excellence
- general reconstruction of rentals in the Academic library
- organising of the Joint International IGIP-SEFI Annual Conference 2010
- cooperation in organising the IDS 2010
- organising the Thursday afternoon sessions *Dies ioviss occursus*
- preparation of activities (Annual Report, propagation materials on the faculty – Welcome, yearbooks, journals, ...)
- library system OLIB

## PUBLICATIONS:

**Rešetová, Kvetoslava:** Implementation of the European Project on Academic Libraries to Support Scientific Research Activities for Faculty. In: *Ikaros* [online]. - ISSN 1212-5075. - Vol. 14, No. 9 (2010), pp. 1-3

**Rešetová, Kvetoslava:** Support of research as a tool of information management. In: *Itlib. Informačné technológie a knižnice*. - ISSN 1335-793X. - Vol. 14, No. 4 (2010), pp. 55-57

**Rešetová, Kvetoslava:** The tools of knowledge transfer in academic areas. In: *Materials Science and Technology* [online]. - ISSN 1335-9053. - Vol. 10, No. 3 (2010), pp. 13-19

**Rešetová, Kvetoslava:** Creation of academic library infrastructure by support of the EU project. In: *Forum of Managers*. - ISSN 1336-7773. - No. 2 (2010), pp. 48-49

**Rešetová, Kvetoslava:** Information management of an academic environment in the transfer process to knowledge society. In: *IKI 2010*. - Praha : Česká informační společnost, 2010. - ISBN ISSN 1803-6090. - pp. 1-9

**Rešetová, Kvetoslava:** Information and knowledge management resources in the academic field. In: *Proceedings of the Joint International IGIP-SEFI : Annual Conference 2010. Diversity unifies - Diversity in Engineering Education, 19th – 22nd September 2010, Trnava, Slovakia*. - Brussel : SEFI, 2010. - ISBN 978-2-87352-003-8

**Rešetová, Kvetoslava - Prelovská, Alena:** Navigation in information sources. - Trnava : AlumniPress, 2010. - 132 p. - e-textbook. - ISBN 978-80-8096-135-0

**Rešetová, Kvetoslava:** Complex management of intellectual property rights. In *Bulletin SAK*, 2010, Vol 18, Nr. 4, pp. 13-17.

**Rešetová, Kvetoslava:** Observation tools of graduates' career in the praxis. In *Academia*, Vol. 21, 2010, No. 4, pp. 32-36



# DIVISION OF PERSONNEL AND ORGANISATIONAL ACTIVITIES

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## Departments

- Department of Personnel
- Department of Work Economy
- Department Wages and Salaries
- Department of Safety and Health Protection at Work, Civilian Protection, Fire Safety
- Department of Security System

## Staff

- Dean's secretariat: 3
- Department of Personnel: 2
- Department of Work Economy: 2
- Department Wages and Salaries: 2
- Department of Safety and Health Protection at Work, Civilian Protection, Fire Safety: 1
- Department of Security System: 1

### 1. Spheres of Influence of the Division of Personnel and Organisational Activities

2. The Division of Personnel and Organisational Activities is the administration-service unit of the faculty which secures all administrative and service activities connected with 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 system of the faculty.
3. The Division of Personnel and Administration Activities 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 Organisational Activities 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 and keeping 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 organization 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) Organization of Safety and Health Protection at Work, Civilian Protection and Fire Safety

### Activities of the Division of Personnel and Administration in year 2010:

- Meeting of former faculty members with faculty management
- Cooperation during International Conference IGIP-SEFI 2010
- Management of the attendance system ESED





# DIVISION OF ECONOMIC AND ESTATE ACTIVITIES

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## Departments

- Department of Operation and Maintenance
- Department of Estate Management
- Student Hostel and Canteen
  - Facility: Student Hostel
  - Facility: Student Canteen

## Staff

- Department of Operation and Maintenance: 61
- Department of Estate Management: 8
- Student Hostel and Canteen
  - Facility: Student Hostel: 38
  - Facility: Student Canteen: 12

## Spheres of Influence of the Division of Economic and Estate Activities

1. The Division of Economic and Estate Activities is the economic-administration unit of the faculty which provides economic, operative, administrative, and other services related to the proper faculty and division operation.
2. The Division of Economic and Estate Activities is responsible especially for:
  - a) preparation, securing and implementation of economic, administrative and operative faculty logistics,
  - b) logistical and controlling functions of the faculty,
  - c) maintenance of the registry system of the Slovak University of Technology at the faculty,
  - d) organization of the implementation of civil defense, fire protection and safety and health protection at work.

## Activities of the Division of Economic and Estate Activities in year 2010:

- reconstruction of the canteen in the pavillion Z
- care of the economic system Magion





# DIVISION OF COMMUNICATION AND INFORMATION SYSTEMS

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## Departments

- Department of Information Systems Operation
- Department of System and Technical Services

## Staff

- Department of Information Systems Operation: 5
- Department of System and Technical Services: 7

## Spheres of Influence of the Division of Communication and Information Systems

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 organizational units of the faculty. This division prepares documents for 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 faculty computer systems,
  - b) provision of casual maintenance and repairs of devices of the faculty information technology and infrastructure,
  - c) provision of consultation services for the system and selected application program equipment,
  - d) development, innovation and implementation of technical and program means for the faculty's information technology,
  - e) organization of training and short-time 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) casual repairs of technical devices reached with the Division of Communication and Information Systems,
  - i) support for cooperation with the Center of Information Technology SUT and other information workplaces at SUT,
  - j) suggestions for short-term and long-term plans of implementation of information technology and preparation of documents for decisions made by the management of the faculty,
  - k) entrepreneurship activity,
  - l) issuance of permissions for connection of devices to the faculty computer network,
  - m) administration of faculty servers and components of the faculty information system.

## PROJECTS OF THE DIVISION OF COMMUNICATION AND INFORMATION SYSTEMS IN YEAR 2010

**Division of communication and information systems contributes to the project of the call of the agency Ministry of Education Slovak Republic for Operation program Research 5.1.2 and 5.1.3:** Support of university infrastructure to improve the conditions of education.

The aim of project is to create the university infrastructures and modernisation of their internal equipment to improve the conditions of education process. The project results will be modernisation of computer nets, datacenter building on the Bottova and Botanicka streets, improvement of the printing system, and modernisation of classes. In the classrooms there will be data projectors and other modern education tools. In the faculty buildings there will be added Internet places for the students. Next, multimedia classrooms will be created and the number of connection points to Internet WiFi will be increased. The next important step is creation of information faculty security, especially by net monitoring, firewall solutions for all LAN FMST, and provision of computers for students also in the dormitory.



## ACTIVITIES OF THE DIVISION OF COMMUNICATION AND INFORMATION SYSTEMS IN YEAR 2010:

- technical support during the International Conference IGIP-SEFI 2010
- active help in organising SANET – connection of secondary and elementary schools to the central node of Internet which is located at the faculty
- implementation of videoconference room which was created according to the technology Telepresence of the company CISCO
- reconstruction organisation of information communication technologies at the faculty



Head of the Division Jaroslav Otčenáš, MSc. Eng. contributes on the project **Knowledge regulated system of observation tools of graduates' careers in the integration process to the EU.**



# CENTRE FOR TECHNOLOGY TRANSFER

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**Staff:** 7

## Spheres of Influence of the Center of Technology Transfer

1. The Center of Technology Transfer is a technical-administrative, service workplace for preparation and management of projects and technology transfer in the direction to praxis.
2. The tasks of the Center of Technology Transfer are especially:
  - a) preparation of projects and administration of projects,
  - b) transfer of the results of the faculty's research into entrepreneurship activities,
  - c) marketing research of praxis requirements for solution of research tasks,
  - d) mediation and coordination of research and scientific events of the faculty,
  - e) conference services,
  - f) certification and patent support and service to the faculty institutes,
  - g) records and entrepreneurship activity of the faculty on the basis of commercial agreements.

## PROJECTS OF THE CENTER OF TECHNOLOGY TRANSFER:

Head of the Centre, Peter Halada, MSc. Eng. contributes to the project solution: Faculty of Materials Science and Technology Slovak University of Technology in Diversity: **Improving Gender Diversity Management in Materials Research Institutions.**

### Activities of the Center of Technology Transfer in year 2010:

- cooperation in opening of the Centre of Excellence hall
- coordination of public procurement projects
- organisation of participation at the trade fair Industry Expo Bratislava

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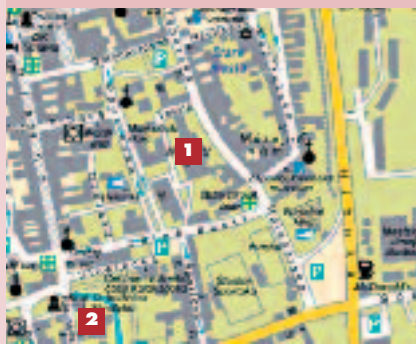




# ORIENTATION MAPS

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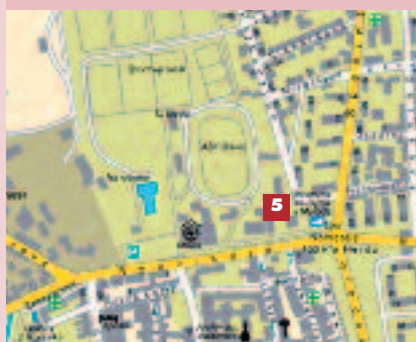
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