



Applicant: Slovak University of Technology in Bratislava

Project: Knowledge-based Faculty for Economic Practice

ITMS code of project: 26110230113

Activity: 3.2

Responsible for activity: PhDr. Kvetoslava Rešetová, PhD.

INSTITUTE OF INDUSTRIAL ENGINEERING AND MANAGEMENT – PROFILE PRESENTATION

Name of activity	Activity 3.2 Building the tools for knowledge transfer into education
Specific objective	3. Building the tools for knowledge transfer into education
Aim of activity	The activity of building the tools for knowledge transfer into education concludes the information flow attained from the analysis of environment impact, and sets up specific tools for the knowledge transfer into education. It is aimed at building a set of tools for transferring the knowledge collected in the previous activities into education at the Faculty, thus enhancing the knowledge base of the target group, while focusing on the functionality of the knowledge transfer to the target group.
Date of activity implementation	10/2013 – 09/2015

Project part: activity 3.2 : 1. Tool for knowledge transfer – profile research presentations

The Faculty research is oriented particularly on the following fields:

- research in materials with focus on the research, development and technological processing of the main types of engineering materials,
- research and development of new technologies in industrial production oriented mainly on technological processing of modern technical materials and environment-friendly production,
- research in identification, automation and control of processes as well as information security of the technology, production and organizational systems,
- research and verification of principles of managerial control and its organizational structures,
- research in quality and certification of processes and products,
- research in safety and reliability of technological devices and systems with emphasis on the methods of systems analysis and synthesis.

The defined research characteristics reflect the Faculty research fields, and are subject to the Faculty evaluation processes. **The current profile presentations comprise the research profile, its identification and recording in a new way.** The Faculty experts in the research fields make the audience familiar with the research characteristics, research and development orientation, so that to provide a comprehensive research profile of the Faculty institutes (there are six institutes at the Faculty) in both Slovak and English languages. The elaboration of text in an adequate number of quires, text translation and copyright rules – all this is subject to the method of the profile presentation implementation. The elaborated profile presentations might be an important material source for:

- training at the Faculty in its key subjects
- domestic and international presentation of the Institute
- enhancement of the advertising space for promotion purposes of the project
- innovative elaboration of the Faculty research contents.

Defined project outcomes:

The project outcomes will be determined by successful implementation of the project activities, particularly activity 1.1 - stakeholding, activity 2.1 - portal of companies, activity 3.1 -implementation from acquired e-sources. Such interaction along with the information flow can influence the success of knowledge transfer into education. The outcomes of previous activities will be utilized in this final activity which should provide space particularly for knowledge transfer and improvement of knowledge base, and simultaneously provide a space for meeting the main project aim. Specific outcomes of the activity will be as follows:

- **six profile presentations mapping the research character of six Faculty institutes, applicable in training and with strong potential for the Faculty promotion**
- production of minimum 30 virtual records of technological procedures outsourced from economic practice and applicable in education, i.e. enhancement of information on applicability for the Faculty doctoral students
- production of minimum 30 virtual records of the Faculty technological procedures and processes, for application in the Faculty education, and for the purposes of comparison of the technological processes and theoretical knowledge acquired in the Faculty training to the knowledge acquired in practice
- four expert lectures for doctoral students (and also for interested Faculty researchers), forming the knowledge base of the target group in four principle science fields.

Implementation of activity:

1. In compliance with the project aims, the activity was introduced to the Heads of the STU MTF Institutes:
Appendix 1: Information for institutes of 12 Dec 2013 , **Appendix 2** : Letter to the Heads of the STU MTF Institutes of 21 Jan 2014
2. Heads of the STU MTF Institutes delegated in writing an Institute representative who will be in charge of the profile presentation elaboration – letters to Heads of the Institutes are in the project archive of the principle investigator
3. Individual meetings of the principle investigator with related employees with focus on structure and contents of profile presentations
4. Collection of data, text modifications, graphical design of presentations
5. Text translation
6. Final arrangement of presentations into e-proceedings of scientific papers
7. Publicizing the profile presentations

Guarantors of profile presentations:

Institute of Materials – Mgr. Marián Palcut, PhD.

Institute of Production Technologies – Assoc. Prof. Ing. Erika Hodúlová, PhD.

Institute of Industrial Engineering and Management – Assoc. Prof. Ing. Helena Makýšová, PhD.

Institute of Safety, Environment and Quality – Prof. Ing. Maroš Soldán, PhD.

Institute of Applied Informatics, Automation and Mechatronics – Prof. Ing. Pavol Tanuška, PhD.

Advanced Technologies Research Institute – Assoc. Prof. Ing. Maximilián Strémy, PhD.

Introduction

The orientation of the STU MTF research activities fastens on the Faculty education profile and is in compliance with the long-term development of the Slovak University of Technology in Bratislava, covering the whole spectrum of the education at STU MTF. The activities of STU MTF researchers are implemented within the following projects:

- projects of base research supported by VEGA grant agency,
- projects of applied research supported by KEGA grant agency,
- projects investigated within international programmes,
- projects of international scientific and technical cooperation,
- projects of base and applied research supported by APVV grant agency,
- contractual research and development (business contracts).

1. Science and Research in STU MTF

Vision of STU MTF

The STU Faculty of Materials Science and Technology in Trnava, in compliance with the STU vision, intends to be a research oriented and internationally renowned faculty within the similar faculties framework, i.e. the faculties developing modern trends in research and industrial production with focus on progressive materials, sophisticated production technologies and industrial management, automation and IT implementation of production and technological processes such as quality, safety, as well as environmental and managerial aspects of industrial production.

Mission of STU MTF

In compliance with the defined mission of the Slovak University of Technology, the STU Faculty of Materials Science and Technology intends to actively contribute to meeting the requirements of the mission – with the priority laid on materials science and production technologies – in accredited fields of education, research and development within the stipulated competences:

- provide the university system of education in all stages in accredited study programmes
- disseminate, improve and develop knowledge by the research and development tools,
- ensure transfer of research results into educational process,
- ensure transfer of research results into entrepreneurial practice,
- protect its research results,
- integrate into the system of university life -long learning,
- participate in sustainable development of society with all its activities, mainly by the development of the student personality in the context of humanism and democracy ideals.

General and strategic goals of research

1. Publish the research and creativity results internationally, particularly in the renowned international scientific journals.
2. Increase the STU MTF status in the projects of international cooperation.
3. Build the research infrastructure (equipment) including the qualified service.
4. Intensify the cooperation with practice, ranging from private industrial companies to public institutions and authorities.
5. Focus the research results and free investigation also on the outcomes, e.g. patents.
6. Improve the orientation on other than grant sources from the state budget, particularly on the sources from abroad, project grant agencies and entrepreneurial activity.

The scientific and research activity of STU MTF is carried out in the forms of:

- projects of the base and applied research and development,

- projects solved within the international programmes,
- projects of the international scientific collaboration,
- projects of contractual research.

The research content is focused on the following areas:

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

2. Profile presentation of the Institute of Industrial Engineering and Management

2.1 History

The Institute of Industrial Engineering and Management (UPIM) was founded on 1 January 2008 as „a continuation” of the rich history of managerial-economic education at the Slovak University of Technology in Bratislava. The roots go back to the year of 1952 when on 1 September 1952 the Department of Machine Industry was founded at the Faculty of Economic Engineering of the Slovak University of Technology in Bratislava (SVŠT at the time). Assoc. Professor Ladislav Pavelka was the founder (and initiator of the Department origin) as well as its first Head. Assoc. Professor Pavelka laid the foundations and educational orientation of the activities of the newly born Department.

In 1957 „The Institute of Economics and Machine Production Organization” originated as a Department’s research workplace. The workplace started cooperation with leading machine plants in Slovakia and carried out the tasks in the field of workplaces organization, complex rationalisation and utilization of mathematical methods in management.

In the academic year of 1960/1961 the Faculty of Economical Engineering ceased to exist and the Department became the part of the Faculty of Mechanical Engineering under the name „*Department of organization and management of mechanical and electrical production*”. At the time, the Department was the only one „directional” department of the kind in the field of „Economics and Management of the Machine Industry” in the Slovak Republic. Professor Jozef Marko becomes the Head of the Department, in 1974 replaced by Professor Alexander Linczényi.

In 1986 the Faculty of Machine Industry of the Slovak University of Technology detached in Trnava was parted from the Faculty of Mechanical Engineering and the Department becomes its part. It is renamed as the „Department of Organization and Management of Machine Production” and soon coped with the new social conditions. It innovated the contents of several subjects within the study branch, particularly in the field of companies’ management, information systems and products quality assurance.

In the academic year of 1989/1990 the study branch is significantly rebuilt regarding the entrepreneurial character of companies and new managerial approaches.

In 1991/1992 the Department underwent further changes. It is renamed as the „Department of Industrial Engineering” and Assoc. Professor Eva Doubková became its new Head. The Department’s activity continuously faced the latest knowledge in the field of industrial production management and in economic scientific disciplines. Correspondingly, this knowledge became the integral part of education at the Department as well as the part of its research activities.

Regarding the trend and requirements of the economic practice, in the academic year of 1995/1996 the Department developed and was renamed again as the „Department of Management and Quality”, with *Professor Alexander Linczényi* being the head of the Department again. In the Engineering (Master) degree study the Department provided two study programmes: „Management of Industrial Plants” and „Production Quality Engineering” (both in full-time and part-time forms of study). Within the „Production Quality Engineering” study programme the doctoral study was accredited as well and this enabled habilitation and inauguration procedures. The Department provided the bachelor degree of „Industrial Management” study programme.

In 2001/2002 the Department successfully managed the transition to the three stage model of higher education (Bc. – Ing. (corresponding to MSc.) – PhD.), and was entitled to execute habilitations and inaugurations in the field of „Industrial Engineering and Management”.

In 2002 the Department underwent another organizational change. Since 1 June 2002 it was divided into two independent departments: "Department of Industrial Engineering and Management" headed by *Professor Miloš Čambál* and "Department of Production Quality" headed by *Professor Alexander Linczényi*. The Department of Industrial Engineering and Management provided the

"Industrial Management" study programme in all three study degrees (Bc. – Ing. (corresponding to MSc.) – PhD.) both in full- and part-time forms of study. The Department was accredited also for habilitations and inaugurations in the field of "Industrial Engineering and Management". The Department of Quality Engineering provide the "Production Quality" study programme in bachelor study degree and "Quality Engineering" in master and doctoral study degrees both in full- and part-time forms of study as well. The Department was accredited for habilitations and inaugurations, too.

In 2008 the Institute of Industrial Engineering, Management and Quality formed by three independent departments – *Department of Management, Department of Industrial Engineering and Department of Quality In 2013 Engineering* - was established. *Professor Miloš Čambál* became the Head of the Institute obtaining accreditation of study programmes in all three study degrees.

In 2010, due to organizational changes within the Faculty organizational structure, the departments were cancelled.

In 2013 the Institute was renamed as the Institute of Industrial Management (hereinafter referred to as UPIM); and the Quality Engineering was passed to the Institute of Safety and Environmental Engineering.

At present, the Institute is headed by Assoc. Professor Jana Šujanová, and the strategy and international development is covered by Assoc. Professor Dagmar Cagáňová, the first deputy. For the pedagogical issues Ing. Dagmar Babčanová, PhD. is currently authorized to stand in for Ing. Zdenka Gyurák-Babeľová, PhD., the second deputy. Assoc. Professor Marek Jemala is in charge of research, and finally Assoc. Professor Helena Makyšová is responsible for the knowledge transfer and cooperation with practice.

2.2 Mission and vision

The mission of the Institute: *"As an advanced provider of technical university education prepare complex industrial engineers and managers for industrial plants able to work in global environment."*

The vision of the Institute is based on the efforts: *"Be and expert and recognized institution where the student changes into a manager and an industrial engineer of a global industrial plant."*

2.3 Education

Currently, the Institute of Industrial Engineering and Management provides education in two forms of study (full-time and part-time) in two bachelor study programmes:

- Industrial Management (PMA),
- Personal Policy in Industrial Plant (PPP),

as well as the Industrial Management study programme in master and doctoral studies.

The pedagogical activity of the Institute of Industrial Engineering and Management is provided in the bachelor and master degrees by lectures and seminars. Within the pedagogical process in the bachelor and master study degrees the Institute employees supervise bachelor and master theses focused on the topics covering the basic Institute orientation, particularly company management, production management, logistics, marketing, accounting, ergonomics, business economics, personnel management and information technologies, strategic management, project management, financial management, controlling, human resources management, management of company

investments development, operational analysis, complex quality management, taxing, innovation, knowledge and information management as well as multicultural issues.

The theses are elaborated in the industrial plants in which the students have to link their theoretical knowledge of the given topic to its utilization in an industrial practice. They are usually companies such as Kia Motors Slovakia, s.r.o., Bekaert Hlohovec, a.s., PSA Peugeot Citroën Slovakia, ZF BOGE Elastmetall Slovakia, a.s., Volkswagen Slovakia, a.s., Chemolac Smolenice a.s., Tatrachema VD Trnava, Emerson a.s., Nové Mesto nad Váhom, IKEA Industry Slovakia s. r. o. and many others.

The field of pedagogical activities of the Institute of Industrial Engineering and Management covers also the lifelong education as follows:

- industrial plant logistics,
- sustainable socially responsible entrepreneurship,
- basic methods and tools of statistical processes control,
- complex statistical methods of quality management,
- creative solution to the issues and workshops delivery,
- quality for managers,
- development of lecturing skills,
- education for the first-line managers - training at the workplace u,
- development of presentation skills,
- modern trends of leadership and motivation,
- coaching - progressive form of subordinates' development,
- effective managerial communication and assertive behaviour,
- development of communication skills and assertive behaviour,
- time-management, delegation of tasks and effective chairing of meetings,
- conflict handling.

The educational activities offered are carried out as close to the learners as possible and supported by information and communication technologies.

The Institute of Industrial Engineering and Management in cooperation with the *Vivaeduca* Civil Association publishes the ***Manager's Forum*** Journal, a Slovak scientific periodical publication. The Journal brings the research results for practice as well as it offers the practical application outcomes of theoretical knowledge of pedagogical, research and expert employees of the Institute and other expert public in related fields of economic sciences. The Journal is aimed at providing the space for the cooperation of educational, scientific institutions and industrial practice both at home and abroad and obtaining reciprocal and beneficial outcomes and contacts.

2.4 Research

The Institute of Industrial Engineering and Management carries out the research activities via:

- scientific and scientific-pedagogical projects implemented within the selection and subsequent support of VEGA and KEGA grant agencies,
- projects implemented within international programmes,
- projects of international scientific-technical cooperation,
- projects of applied research and development,
- projects of contractual research and development.

Regarding the contents of the activities they are mainly focusing on:

- progressive approaches in the field of organizations management,
- human resources management,
- development of managerial competences,
- knowledge management,

- project management,
- logistics,
- production,
- marketing,
- quality management,
- operational analysis,
- ergonomics,
- social responsibility of organization.

Recently, the Institute has carried out numerous research tasks within national and international cooperation. Regarding this, the following **international research projects** have to be emphasized:

International Visegrad Fund: *"Festival of Science as a Platform for intensifying Cooperation between V4 Region Universities"*, aimed at building the bases for active scientific cooperation among V4 Region countries using the best practice exchange and knowledge transfer. The project was an opportunity for connecting the academic and business institutions from V4 countries in the field of research, education and international mobility of university teachers and students.

ALTECS Project: *"Knowledge exchange in the framework of alternative economic systems for the promotion of sustainable regional development"* – carried out within the funding programme of European Territorial Cooperation Slovak Republic – Austria in cooperation with the following institutions: Vienna University of Economics and Business, the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management, the Vienna Chamber of Commerce, the Slovak Regional Chamber of (SOPK) in Trnava and the Slovak University of Technology, Faculty of Materials Science and Technology in Trnava. ALTECS Project implementation comprised also a three week summer university.

South East Europe Programme: *"AUTOCLUSTERS"* – the project joined universities, research and development institutions, support facilities from EU-15 countries to prepare and create the first automotive network in the South East Europe. Next, the project focused on *clustering* – the activity oriented on the enhancement of innovation capacities and processes in the region and on the technologies and know-how transfer within automotive industry.

Universities as engines for development of knowledge society – the main idea of the project: adjust the university education to the needs of knowledge society via the development of innovative educational formats, development of active universities' cooperation with private sector. As the universities are considered to be the engine of young people knowledge and motivation development, the primary key of a quality and efficient university is represented by the implementation of its graduates in the job market.

Besides the afore-mentioned research projects the Institute has implemented the **projects within European Union funds**, such as:

Knowledge-based Faculty for Economic Practice – its main focus is on developing the tools for intensifying the cooperation of the Faculty and the practice. Due to the project implementation the database of offer for the cooperation with practice has originated representing thus the portfolio the Faculty can provide to the expert public. The mechanisms of the continuously upgrade database are the prerequisite for developing and using the sustainable tool for connecting the school and the practice as its main goal is to prepare its graduates for the needs of the practice.

Centre for Development of the Competencies in the Field of Industrial Engineering and Management – aimed at contributing to the human potential development in research and

innovations in the field of industrial engineering and management, particularly via the qualifications and competencies improvement of university teachers, researchers and experts from industrial practice which can contribute to better networking of the activities of universities, research centres and companies. The project goal was implemented by means of a set of trainings at renowned training domestic and international workplaces oriented on the development of basic and specific competencies with regard to Europe 2020 Strategy. For the requirement of knowledge transfer the *Centre for the Development of Competencies in the Field of Industrial Engineering and Management* was established with its main task to provide lifelong education in question and support of research oriented projects implementation with industrial companies and research workplaces in Slovakia and abroad. The direct knowledge transfer was ensured also by entrenching accredited study programmes, introducing a study programme in English language and its accrediting according to the ABET Standard.

All in all, the Institute implemented the following projects: **1 project within 6 Framework Programme, 3 projects within 7 Framework Programme, 1 project within the International Visegrad Fund, 1 project within European Fund for Regional Development: 1 project within South East Europe Programme, 1 project of bilateral cooperation within APVV Agency;** in addition, the Institute applied **for 3 projects within Horizon 2020.**

Regarding the national projects, it is necessary to mention **VEGA** projects:

The Identification of Sustainable Performance Key Parameters of Industrial Enterprises within Multicultural Environment. The project was aimed at research of approaches to organization management performance with focus on performance sustainability. The project was oriented on the enterprises in specific conditions of a multicultural organization (with focus on industrial enterprises).

Information Quality Management within the Project Management in Industrial Organizations in SR. The project developed the results of previous Institute's projects where the partial goal was represented by the identification of drawbacks in the field of information quality and information management with negative impact on project successfulness. The project was aimed at designing the methodology of quality information management based on the analysis of information processes, flows and sources of the project management in Slovak industrial organizations.

Research on factors influencing the selection and implementation of integrated marketing communication tools with regard to safety of information and customer protection – the research addressed the field of scientific research and evaluation of factors influencing the selection and implementation of integrated marketing communication tools in various types of organizations so that their application could represent the optimal model corresponding with various aspects of information security management in compliance with EU principles on one hand, and with the security needs and satisfaction on the other hand. The project resulted in proposing the methodology of practical application of evaluation, verification, selection and subsequent implementation of integrated marketing communication tools in various types of organizations by using optimal software aimed at improving the efficient integrated marketing communication in the related organizations oriented on the customer, product quality and information safety.

Transformation of Ergonomic Programme into the Structure of Company Management via integration and utilization of OMS, EMS, and HSMS Modules – the project was aimed at confirming the needs, definition of possibilities and procedure design of the utilization of QWS, EMS and HSMS modules so that the ergonomic programme content is transformed into the structure of company management activities. The project results application had to improve the conditions of production processes procedure so that they could guarantee their high level by the work performance at

minimum risk of employees' work and health safety in accordance with the sustainable development philosophy.

KEGA Project: *Implementation of the subject "Sustainable corporate responsible entrepreneurship" into the study programme of Industrial Management in the second degree of study at STU MTF.* The project was aimed at the implementation of the aforementioned subject into the study programme of Industrial Management in accordance with the strategy context of EU sustainable development, Europe 2020 Strategy for Employment and Growth, Enterprise 2020, EU Council Resolutions (2010/c 327/05) and accepted ISO 26000 Standard on corporate responsible entrepreneurship.

APVV Project: *Concept of HCS 3E model vs. Concept of Corporate Social Responsibility (CSR).* The research was carried out in cooperation with CHIRANA PROGRESS, Company, s.r.o. Piešťany in the field of sustainable development and Corporate Social Responsibility. The project was aimed at contributing to the Agenda 21 Vision and Lisbon Strategy in the individual pillars of sustainable development strategy in the conditions of research activities and pedagogical process at the STZ MTF workplaces.

All in all, within the national research activities the Institute implemented *16 VEGA projects, 6 KEGA projects, 2 APVV projects and 7 institutional projects.*

The most important ***projects of contractual research for practice*** are as follows:

Project financed by the means of Volkswagen Slovakia Foundation within the grant programme "Develop by technology" and titled as: ***Increase of Technical Knowledge Base and Practical Skills of Teachers and Students of the Institute of UPIM in the Concept "Digital enterprise"***. The project aimed at the improvement of technical knowledge as well as practical skills of teachers and students of UPIM with focus on innovation applications in the practice of car industry.

Project ***Materialfluss PW - KB, Volkswagen Slovakia*** was oriented on the complex proposal implementation of material flow and logistic processes among the halls with the follow-up optimization of proposed variables in Volkswagen Slovakia. The focus of project implementation (and later of verification as well) was placed on the field of company logistics with the possibility to monitor the overall inputs as well as subsequent investments for the solutions proposed. The project was oriented on solving the efficiency from the point of minimizing the need of employees with regard to respect to ergonomic requirements necessary for work performance and ensuring the objective amount of modern manipulation technology at the same time, considering thus the demands and needs of the company for the upcoming periods.

Project within OPV Programme: ***Rationalization and improvement of the Industrial Management study programme to support Career Consultancy.*** The project was aimed at improving the quality of the Industrial Management study programme via modern educational methods and ICT and support of career consultancy, i.e. with regard to the "The Regulations of Quality Management Education at STU in Bratislava", as well as the requirements of the practice, on carrying out such changes that would enhance the graduates' employment in the job market (which would directly support the latest knowledge transfer into practice) as well as their preparedness so that they were able to develop and execute the innovations in their work procedures, products and services.

Optimization of NSF, DHL Exel Body Shop Production Lines Supply – project aimed at the optimization of material flows from the supermarkets to the individual welding lines in NSF welding shop in Volkswagen Slovakia a. s., where the logistic processes are provided by the external DHL Exel Company. The partial tasks were: the elaboration of MTM analyses of individual supply tracks,

analysis of CXT towing vehicles loading, proposals of supply tracks optimization and implementation of the solution into practice.

Optimization of supply systems, Inergy Automotive Systems – the project was aimed at developing the new logistic system with regard to work security and productivity improvement with considering the capacity and technology possibilities at the same time. The project priority was represented by the current state identification of the personnel loading of the external company ensuring the logistic processes as well as by the objective potential evaluation for further logistic processes development in the company.

Optimization of supply systems in a company, HBPO – the project was aimed at the material flow from the warehouse to the production with focus on 20% material savings and assembly area with using no forklift manipulation technology.

Proposal of decreasing the manual manipulation load and activities harmful to the motoric body system in Chemosvit Folie Company, CH-F, a. s. - the project was aimed at decreasing the physical load of employees via manual manipulation in setting the extensions in the coppering and chromium-plating processes of HTL cylinders using Tecnomatix Jack 8.2 Simulation Tool. Currently, the project tasks are being investigated, particularly the proposal part with regard to organizational and technical measures, development of work standards, employees work organization and technical measures for the modification of achieve distances in the human-machine relationship.

Within the science and research popularization the Institute employees participated in the event titled **Researchers' Night** and initiated another event "**Festival of Science**" in Trnava.

2.5 Cooperation with practice

The Institute of Industrial Engineering and Management offers the possibilities of cooperation to partner institutions in the fields as follows:

Project management – where the workplace provides the courses oriented on project teams management and effective communication, quality management within, selection of project management methods, Earned Value, effective solution to the issues in conflict handling, project risks, MS Project, knowledge management within, Project Cycle Management, project planning and evaluation.

Statistical processes control – i.e. the knowledge related to the methods and tools of statistical processes control, their implementation in assuring and improving the production processes quality and in applying of selected complex statistical methods.

Logistics – particularly, it is the analysis and evaluation of logistic and production processes, projecting and material flow analysis, optimization of economy warehouse, improvement of logistic processes efficiency via lean tools, etc.

Ergonomics – i.e. monitoring of work and work environment influences on the employees, employees' physical load evaluation and influence of human-machine interaction as well as the outlay of energy evaluation, development of time and motion studies, etc.

Human resources management and personnel management – focuses on the field of conflict handling, time management, delegation of tasks, effective meeting chairing, development of communication skills and assertive behaviour as well as efficient managerial communication, coaching as a progressive form of subordinates' development, modern trends of leadership and motivation, education at workplace for the first-line managers, trainer trainings – development of

lecture skills, managerial creativity, creative solution to the problems and workshops delivery.

Sustainable corporate responsible entrepreneurship – is oriented on acquiring experience in the field of sustainable development and sustainable corporate responsible entrepreneurship. The introduction of the multi-criteria optimization via analytic-hierarchic process is included in the educational activities as well.

The individual seminary rooms of the Institute are equipped by standard computer technology necessary for a contemporary user. They are the computers, data-projectors, interactive board and notebooks with hardware relevant to the subject and field covered by the Institute.

The Institute of Industrial Engineering and Management has a laboratory for the analyses execution in the field of logistics and ergonomics at its disposal. It comprises the assembly table, manipulation truck – access platform, rack truck for boxes, high-capacity pallet as well as the instrument for measuring the loading of small muscle groups, lux meter, and a humidity meter with a thermometer. The competent employees can demonstrate the procedure of real production, manipulation operations here and they look for the possibilities of making the procedure more efficient with regard to effectiveness, performance and overall loading of employees.

Considering software equipment of the Institute, the following training activities are available:

- *MS Project* – is for planning, managing and evaluating the project implementation effectiveness,
- *SPSS* – software tool for statistical management and processes quality assurance,
- *Tecnomatix Plant Simulation 11, Tecnomatix Process Simulate* – means for the simulation of a production process and related material flow, logistic flows, it is the tool for evaluating the processes from the point of view of an added value for a customer - VSM, Kanban, etc.,
- *Tecnomatix Jack 8.2, 3DSSPP, EEPP* – simulation tools for the analysis, evaluation, and optimization of physical load, for monitoring the ergonomic risks and their impact on efficient work performance of an employee,
- *Factory CAD, Factory FLOW* – software applications for developing, projecting of 3D production workplaces and creation and evaluation of existing material flows,
- *Expert Choice* – tool for multi-criteria decision via analytic-hierarchic process.

While intensifying the relationship with the industrial practice and supporting the dual education in the context of *Universities as engines for development of knowledge society*” Project, the Institute organizes excursions as well as study stays for its students and employees on regular basis. Recently, they were the excursions to the following companies: CHEMOSVIT FOLIE, a. s., VOLKSWAGEN SLOVAKIA, a .s., IKEA Industry Slovakia s. r. o. - plant Majcichov, INA Kysuce, spol. s r. o. and CEIT Žilina, Kia Motors Slovakia, s. r .o., Bekaert Hlohovec, a. s., PSA Peugeot Citroën Slovakia, ZF BOGE Elastmetall Slovakia, a. s., Johnson Controls spol. s r. o. and others.

The excursions should bring the students closer to the production and non-production processes in the companies given and point out the current trends in the field of production control, company logistics, ergonomics and safety as well as in the field of quality assurance or environmental aspects of production processes. The same emphasis is placed on the requirement for knowledge and experience transfer into pedagogical process at technical universities, particularly into the study programme of Industrial Engineering both by the Institute and representatives of practice.

The students’ study stays focus on long-term visits (3, or 6 months). The students actively participate in company tasks and projects. This knowledge transfer can significantly help the comprehension of specific information acquired during their study as well as it can help them understand and find connections among individual subjects.

So far the study stays were in the following national and international companies: GEODIS Ireland Ltd.(Ireland), Johnson Controls Polska SP. Z o.o, Swiebodzin (Poland), Leoni Slovakia, spol. s r.o. - Kompetenčné centrum Trenčín (*Competence Centre*), ŽOS Trnava, Faurecia s. r. o., Hlohovec.

The students can develop their language skills, skills in the field of planning and organizing their work duties as well as their interpersonal skills. They have the possibility to work in a multinational team and gain work experience also within the international working environment. With regard to the fact that many multinationals transfer their work style and individual methodologies of processes also into their daughter companies, the students in Slovakia have the opportunity of an insight into current trends and their real utilization in the company given..

The Institute of Industrial Engineering and Management strives to keep in touch with the business environment also via the meetings and professional lectures delivered at the Faculty. The Institute management organizes the regular event ***"Discussions/Dialogues with practice"*** where they invite the outstanding business personalities with rich managerial experience and willing to share it. In recent two years they were the following businessmen: Dr. h. c. Ing. Jozef Uhrík CSc. – honourable President of Automotive Industry Association of the Slovak Republic, Ing. Peter Čirka – General Manager for Eastern Europe in Johnson Controls Company, Assoc. Prof. Ing. Ján Lešínský, CSc. – Head of STU Institute of Lifelong Learning, Assoc. Prof. Ing. Štefan Rosina, PhD. – President and General Manager of MATADOR Holding, a. s., PhDr. Branislav Hunčík, PhD., CHRO (Chief HR Officer) – Penta Investments, s. r. o. Praha, Ing. Milan Šesták - General Manager of Emerson, a. s. Nové Mesto nad Váhom and President of Slovak Society for Quality, Ing. Juraj Janáč – Head of Logistics in VOLKSWAGEN SLOVAKIA Company, a. s. and many others.

They were the personalities the Slovak Republic as well as the Faculty is proud of as they graduated from the Faculty of Materials Science and Technology or from one of the other STU faculties. These personalities are in their positions due to their knowledge and skills, and they are the *par excellence* representatives of our Alma Mater. For students they represent a motivation factor and they can understand their study programme and future career better.