

LABORATORY OF INDUSTRIAL ENGINEERING

<http://lpi.fei.tuke.sk>

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Head of Laboratory

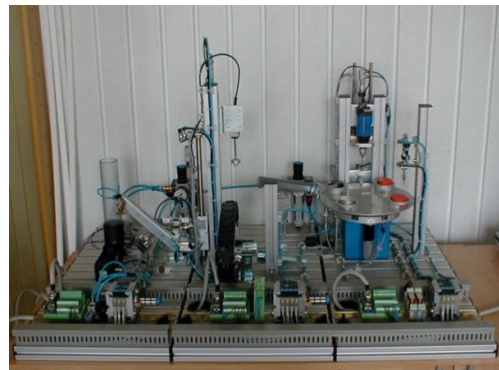
Assoc. prof. Michal Girman, PhD.

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1 LABORATORY'S PROFILE

The mission of the Laboratory is teaching and research in the area of effective production planning and control, modern technologies in manufacturing (IT & Automation), and the human factor in manufacturing. The Laboratory introduces a new branch of study - Industrial Engineering. This profession will adopt as its goal a



continuous improvement of products and services throughout their life cycles. The humanistic and social sciences, computer sciences, basic sciences, management sciences, highly developed communication skills along with physical, behavioral, mathematical, statistical, organizational, and ethical concepts are used to achieve these aims.

2 STAFF

Associate Professors: Michal Girman, PhD.
Kristína Zgodavová, PhD.
Marcela Halušková, PhD.

Assistant Professors: Peter Bober, PhD.
Peter Košč, PhD.

Senior Scientists: Juraj Haluška, PhD.

Technical Staff: Dipl. Ing. Gabriela Brečková

PhD. Students: Dipl. Ing. Peter Keusch
Dipl. Ing. Walter Commerell

3 EQUIPMENT

3.1. Teaching and Research Laboratories

- Laboratory of Industrial Systems is designed for courses as Industrial Systems, Automation of Technological Processes, and Industrial Electronics.
- Laboratory of Information Technologies is designed for courses as Information Systems in Industry and Simulation of Manufacturing Systems.

3.2. Special Measuring Instruments and Computers

- The Laboratory of Industrial Systems is equipped with:
 - Pneumatic and hydraulic systems FESTO DIDACTIC (compressor, linear pneumatic motors, electropneumatic valves, linear pneumatic NC axis, hydraulic generator, linear hydraulic motor, electrohydraulic valve).
 - Modular Production System from FESTO DIDACTIC (full functional distribution, testing, and processing stations controlled by PLC).
 - AC drive with LENZE converter, DC drives with ALLEN BRADLEY converters.
 - Programmable controllers: SIEMENS (SIMATIC S7-400 with SIMATIC NET CP for Industrial Ethernet, SIMATIC S7-300 with PID Control Module and SIVAREX Weight Module, and two SIMATIC ET200M), ALLEN BRADLEY (two controllers from SLC500 family), TELEMECANIQUE (TSX 07)
 - Timers and Semiconductor Contactor from CARLO GAVAZZI
 - Physical model of continuous line with five DC disk drives
 - Plotters for educational purposes controlled by PC
 - 10 Personal Computers

- The Laboratory of Information Technologies is equipped with:
 - Personal Computers
 - Four servers
 - Multimedia Projectors
 - Digital Video Camera, Video grabber, Scanner
 - Software:
 - ARIS tool for business process reengineering
 - Macromedia Director
 - J Builder for Java programming
 - Matlab
 - SIMPLE++ simulation software

4 TEACHING

4.1. Undergraduate Study (Bc.)

4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/seminars or practical exercises (hours per week)	Name of lecturer
Industrial Electronics	5 th	2/3	Haluška
Industrial Systems	5 th	2/3	Bober

Subject	Semester	Lectures/seminars or practical exercises (hours per week)	Name of lecturer
Operation Research	5 th	2/3	Košč
Automation of Technological Processes	6 th	2/3	Girman
Information Systems in Industry	6 th	2/3	Košč
Real-time Programming	6 th	2/3	Bober
Project Management	7 th	2/2	Halušková
Logistics	7 th	2/2	Girman
Quality Control	8 th	2/2	Zgodavová
Simulation of Manufacturing	8 th	2/3	Bober

Systems			
Design of Manufacturing Systems	8 th	3/3	Halušková
Design of Quality Management Systems	8 th	2/3	Zgodavová
Automation of Technological Processes II	9 th	2/3	Girman

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

Subject	Lectures/seminars or practical exercises (hours per week)	Name of lecturer
Microprocessor Technique	2/3	Bober
Project Management	2/2	Halušková
Quality Engineering	2/2	Zgodavová

5 RESEARCH PROJECTS

- *Parallel Simulation of Production systems, Institutional project of FEI TU Košice No. 4415, duration: 2000 - 2002, co-ordinator: Peter Bober, activity: Development of software tools for implementation of simulation in different area of production systems.*
- *Research of Theoretical And Practical Problems of Quality Management of Onset New Production, Slovak Scientific Grant Agency VEGA project No. 1/7111/20, duration: 2000-2002, co-ordinator: Kristína Zgodavová, activity: Creation of relatively complete theory and methodology of quality management for launching of new production. It includes identification and analysis of failures generation and dissemination, investigation of the assumptions regarding further evolution of the production.*

6 CO-OPERATION

6.1. Co-operation in Slovakia

- University of Žilina
- Slovak University of Technology, Bratislava

- University of Pavol Jozef Šafárik, Košice
- Boarding School for Disabled People, Košice
- Didactic Center, Prešov
- Industrial Property Office of the Slovak Republic, Banská Bystrica
- Regional Advisory and Information Centre, Košice
- SWH Siemens Business Service Ltd., Bratislava
- US Steel Ltd., Košice
- Kopex Ltd., Košice.
- Whirlpool Slovakia Ltd., Poprad
- Embraco Slovakia Ltd., Spišská Nová Ves
- Slovtransgaz Slovakia, Veľké Kapušany
- Slovak Union for Quality, Innovation and Design Q-IMPULZ, Košice

6.1.1. Visitors to the Laboratory

- Drs. Frank Buskermolen, University of Utrecht, The Netherlands
- Drs. Perry den Brok, University of Utrecht, The Netherlands
- Prof. Gunther Hentschel, University of Applied Sciences, Germany
- Prof. Bernd Lange, University of Applied Sciences, Germany
- Dipl. Ing. Walter Commerell, University of Applied Sciences, Germany
- Prof. Ludwig Kolb, University of Applied Sciences, Germany
- Prof. Peter Konold, University of Applied Sciences, Germany
- Prof. Raimund Ruderich, University of Applied Sciences, Germany
- Jarl Marklund, Solviks Folkhögskola, Sweden
- Jarkko Hirvela, University of Vaasa, Finland
- Prof. Josu Takala, University of Vaasa, Finland

6.2. International Co-operation

- VSB-Technical University of Ostrava, Czech Republic
- West Bohemian University, Pilsen, Czech Republic
- University of Vaasa, Finland
- Växjö University, Sweden
- Hongkong Baptist University, China
- University of Utrecht, The Netherlands
- University of Salerno, Italy
- University of Calabria, Italy

- Fachhochschule Ulm, Germany
- University of Patras, Greece
- Vienna University of Technology, Austria
- The Nottingham Trent University, United Kingdom
- Solviks Folkhögskola, Sweden

6.2.1. Visits of Staff Members to Foreign Institutions

- Peter Bober: University of Vaasa, Finland, 20 April - 1 May; University of Utrecht, The Netherlands, 7 - 14 October 2001
- Gabriela Brečková: University of Utrecht, The Netherlands, 7 - 14 October 2001
- Michal Girman: University of Applied Sciences, Ulm, Germany, 8 - 6 March, 22 - 24 May, 16 - 22 July, 7 - 13 October 2001
- Juraj Haluška: University of Applied Sciences, Ulm, Germany, 3 – 9 March; Thomas Bata University in Zlin, Czech Republic, 14 - 15 November 2001
- Marcela Halušková: University of Applied Sciences, Ulm, Germany, 3 - 9 March, 3 - 16 September; Thomas Bata University in Zlin, Czech Republic, 14 - 15 November 2001
- Peter Košč: Solviks Folkhogskola, Kage, Sweden, 13 - 16 February; University of Applied Sciences, Ulm, Germany, 14 - 18 May, 5 - 9 July, 22 - 26 September; University of Utrecht, The Netherlands, 8 - 12 May, 30 Jun - 4 July, 31 July - 6 August, 27 September - 1 October 2001
- Kristína Zgodavová: University of Vaasa, Finland, 20 April - 8 May, 14 - 19 September; Technical University of Ostrava, Czech Republic, 12 - 15 Jun; University of Utrecht, The Netherlands, 7 - 14 October; University of West Bohemia, Pilsen, Czech Republic, 14 - 15 October; University of Applied Sciences, Ulm, Germany, 25 - 31 October; Thomas Bata University in Zlin, Czech Republic, 12 - 15 November 2001

6.3. Membership in International Organizations and Societies

- Zgodavová, K.: Czech Organization for Quality Personnel Accreditation DTO Ostrava

6.4. Membership in Slovak Organizations and Societies

- Zgodavová, K.: Slovak Union for Quality, Innovation and Design Q-IMPULZ

6.5. Contracts, International Scientific Projects

- *Measurement of Fluid Flows by means of Orifice Plates, Nozzles and Venturi Tubes Inserted Cross-selection conduits Funning Full (according ISO 5167-1), Contract for Slovtrasgaz Slovakia, Velké Kapušany (SK).*
- *STAMP - European Standards for Advanced Manufacturing Technologies and Intellectual Property, TEMPUS project IB_JEP-14092-1999, partners: Slovak University of Technology (SK), University of Pavol Jozef Šafárik (SK), Regional Advisory and Information Centre Košice (SK), SWH Siemens Business Service (SK), University of Applied Sciences, Ulm (D), University of Utrecht (NL), duration: 1999-2001, co-ordinator: Peter Košč, contractor: Peter Košč, activity: Training of Slovak civil servants and professionals in EU standards for advanced manufacturing technologies and intellectual property.*
- *SOCRATES Program: Higher education (ERASMUS), SOCRATES project, partner: University of Applied Sciences, Ulm (D), duration: 1999 – 2001, contact: Marcela Halušková, activity: Co-operation within the SOCRATES Program - students and teachers exchange.*
- *SOCRATES Program: Higher education (ERASMUS), SOCRATES project, partner: University of Vaasa (Fi), duration: 1999 – 2001, contact: Kristína Zgodavová, activity: Co-operation within the SOCRATES Program - students exchange program.*
- *Catalogue of products of VSŽ Oceľ, Funding: VSŽ Oceľ s.r.o., Košice, V96, partners: VSŽ Oceľ s.r.o., Košice (SK), Kopex s.r.o., Košice (SK), duration: 1999 – 2001, co-ordinator: Ján Čepko (VSŽ Oceľ), activity:*
 - 1) Innovation and continuous data updating for Catalogue of products of VSŽ Oceľ.
 - 2) Preparation of materials for updating Intranet, Internet, CD-Rom, and printed Catalogue.
 - 3) Establishing of system for database updating of standards VTP SO 18/PV.
 - 4) Creation of CD-Rom Catalogue.
- *Lifelong e-learning for quality professionals, Contract for Slovtrasgaz Slovakia, Velké Kapušany (SK).*

7 THESES

7.1. Masters Theses

1. Bubelíni, R.: Control of Production with Method of DBR (Halušková, M.)

2. Čižmár, R.: Educational CD – Language STEP7 – KOP (Girman, M.)
3. Čorej, C.: Educational CD – Logistics (Girman, M.)
4. Demko, R.: Managerial Information System for Wage and Material Costs Monitoring (Girman, M.)
5. Dudáš, R.: Teaching Course of Programming in STEP 7 in MACROMEDIA Director (Girman, M.)
6. Ďurčenková, M.: Business Process Modelling using ARIS Toolset (Košč, P.)
7. Fecko, P.: Web Based Learning Environment for Learning in Organisation (Košč, P.)
8. Gábor, M.: Information System of Slovak Television Studio Košice (Halušková, M.)
9. Hanák, J.: Analysis of Production Management Methods (Halušková, M.)
10. Horváth, M.: Simulator Program for Production Management (Haluška, J.)
11. Hrobáková, H.: Project of Benchmarking Center at LPI FEI TU (Zgodavová, K.)
12. Jančušová, D.: Information System for Clinique of Traumatology (Halušková, M.)
13. Jurečka, M.: Model of Integrated Information System Centres of Distance Learning on the Internet (Košč, P.)
14. Jurečko, M.: Multimedia Learning Software for Project Management (Halušková, M.)
15. Kabáč, M.: Gauge Control of Mill Spring (Girman, M.)
16. Kolesár, M. (1976): Human Resource Management in Project Management (Halušková, M.)
17. Kolesár, M. (1977): Multimedia Learning CD for Language STEP7 - AWL (Girman, M.)
18. Kuruc, J.: ARIS Toolset as a Tool for Business Process Reengineering – Multimedia Educational Software (Košč, P.)
19. Kušnir, S.: Web Supervising for Modular Production System FESTO (Bober, P.)
20. Lévy, M.: Information System Storage Facilities (Girman, M.)
21. Makeľ, A.: Education CD – Language STEP7 – FUP (Girman, M.)
22. Martiniaková, M.: Project Management of Services (Halušková, M.)
23. Nováková, Ľ.: Evaluation of Web Page Design Focused Companies – Study (Zgodavová, K.)
24. Petruš, J.: Simulator of Step7 (Girman, M.)
25. Podolinský, M.: Utilization of Simulation for Design of Technology Control (Bober, P.)
26. Pokorný Václav: PHP for e-commerce (Košč, P.)
27. Remiáš, M.: RTG and CT Images Transmission (Girman, M.)
28. Schvarcz, K.: Virtual Shopping (Girman, M.)
29. Sivulka, S.: ARIS Toolset for Modelling of Processes in SMR (Košč, P.)

30. Šváb, M.: e-learning for Small and Medium Enterprises (Košč, P.)
31. Velgosová, M.: Quality Index of Electro technical Products (Zgodavová, K.)

7.2. Doctoral Thesis

1. Commerell, W.: Hardware in the Loop Simulation of Electromobile, (Girman, M.)

7.3. Dissertation Thesis

1. Halušková, M.: Change Management in Industry and New Roles of Industrial Engineering.

8 OTHER ACTIVITIES

- Editorial board for Journal „Kvalita Inovácia Prosperita“ (Quality Innovation Prosperity), ISSN 1335-1745
- Courses for industry (project STAMP):
 - Quality Professional - ISO 9000:2000
 - Quality Professional - EFQM Excellence Model
 - Quality Professional - Software Quality Engineering
 - TQM for Secondary School Managers
 - Distance Education Technologies for IT Teachers
 - Programming in STEP7
 - Java programming – Basic course
- Development of web courses (project STAMP):
 - EU Standards for Quality Professionals
 - EU Standards in Intellectual Property
- Lectures abroad:
 - Kristína Zgodavová, Quality and Safety Management – Basic Course, University of Vaasa, Finland
 - Peter Bober, Embedded Systems, University of Vaasa, Finland
- Organisation of conference Riadenie nábehu novej produkcie (Managing...:), 30th November 2001, Jahodná (Slovakia)
- Establishment of the Center of Excellence in the field of distance education of
 - Quality Control
 - Automation
 - Intellectual property

9 PUBLICATIONS

9.1. Books

1. ZGODAVOVÁ, K. et. al: *Profesionál kvality (Quality Professional)*. Košice: [s.n.], 2001, ISBN 80-7099-669-2, p. 630
2. BOBER, P. – KIŠOŇOVÁ, E.: *Inžinierstvo kvality softvéru (Software Quality Engineering)*. Košice: [s.n.], 2001, ISBN 80-7099-747-80, p. 94

9.2. Journals

1. ZGODAVOVÁ, K. - KOŠČ, P. - KAKÄLE T.: *Learning before Doing: utilizing co-operative role play for quality management in virtual organization*. In *Journal of Workplace Learning*, 2001, vol. 13, no. 3, pp.113-118
2. ZGODAVOVÁ, K.: *Modelovanie nábehovej krivky novej produkcie (Modelling of the New Production Curve)*. In *Kvalita Inovácia Prosperita*, 2001, vol. 5, no. 1, pp.12-31
3. ZGODAVOVÁ, K. - BOBER, P.: *Počítačom podporovaná simulácia hry rolí pre projektovanie systému manažérstva kvality (Computer Aided Role-Play Simulation for Design of Quality Management System)*. In *Jakost pro život*, 2001, vol. 2, no. 4, section *Jakost a kvalifikace*

9.3. Textbooks

1. ZGODAVOVÁ, K.: *Totálny manažment kvality verejnej správy (Total Quality Management in Public Administration)*. In *Ďalšie vzdelávanie pracovníkov verejnej správy: Zväzok II*. Košice: Vienaľa, 2001, ISBN 80-7099-639-0, pp. 60-93

9.4. Conferences

1. HALUŠKOVÁ, M. - KOLLÁR, F.: *Riadenie a zlepšovanie procesov (Managing and Improving of Processes)*. In *Zborník vybraných príspevkov z konferencie: Kvalita pre 21. storočie, 22. marec 2001*. Žilina (Slovakia): [s.n.], 2001, pp.63-69
2. HALUŠKOVÁ, M.: *Riadenie projektov a teória obmedzení (Project Management and Theory of Constraints)*. In *Zborník príspevkov z odbornej konferencie s medzinárodnou účasťou: Projektové riadenie – nástroj zmien, 11. - 13. jún 2001, Smolenice*. Trnava (Slovakia): [Spoločnosť pre projektové riadenie?], 2001, pp. VIII-1/5 – VIII-5/5
3. ZGODAVOVÁ, K. - SLIMÁK, I. - BOBER, P.: *Plánovanie, monitorovanie a*

riadenie nábehu a rozvoja novej produkcie (Planning, Monitoring and Control of Onset and development of New production). In Kvalita - životní styl 21. století: Mezinárodní konference: 13. - 15. 11. 2001. Praha - Nymburk, Praha: Česká společnost pro jakost, 2001, pp. 146-156