

## LABORATORY OF INDUSTRIAL ENGINEERING

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**Head of the Laboratory**  
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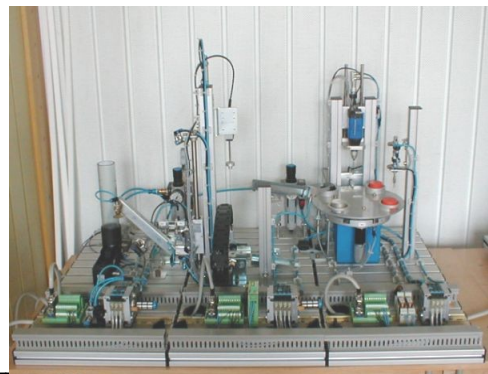
### 1 LABORATORY'S PROFILE

The mission of the Laboratory is teaching and research in the area of effective production planning and control, modern technologies in manufacturing (IT & Automation), quality management, and the human factor in manufacturing. The Laboratory introduced a new branch of study - Industrial Engineering. This profession adopts 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:** doc. Ing. Michal Girman, PhD.  
doc. Ing. Marcela Halušková, PhD. (until 1<sup>st</sup> April)  
doc. Ing. Iraida Kolcunová, CSc. (from 1<sup>st</sup> May)

**Assistant Professors:** Ing. Peter Bober, PhD.  
Ing. Juraj Haluška, PhD. (until 1<sup>st</sup> Jun)



Ing. Peter Kmec, PhD.

Ing. Peter Košč, PhD.

**Senior Scientists:** Ing. Peter Keusch

**Technical Staff:** Ing. Gabriela Brečková

**Ph.D. Student:** Ing. Dominik Fabrici    Ing. Peter Keusch (part-time)  
Ing. Ľubomír Lengyel (part-time)

### **3 EQUIPMENT**

#### **3.1. Teaching and Research Laboratories**

- Laboratory of Industrial Systems is designed for courses as Industrial Systems and Automation of Technological Processes.
- Laboratory of Information Technologies is designed for courses as Multimedia Techniques, Java Programming, Information Systems in Industry, Simulation of Production Systems, and Business Process Modeling.

#### **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 valves).
  - Modular Production System from FESTO DIDACTIC (full functional distribution, testing, and processing stations controlled by PLC).
  - 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), TELEMECANIQUE (TSX 07).
  - 10 personal computers
- The Laboratory of Information Technologies is equipped with:
  - 16 personal computers
  - two servers
  - multimedia projector
  - digital video camera, video grabber, scanner
- Software:
  - ARIS tool for business process reengineering, Macromedia Director, J Builder for Java programming, SIMPLE++ simulation software, PV 4 simulation software, Cognos Impromptu, PS-8 project management software

### **4 TEACHING**

#### **4.1. Undergraduate Study (Bc.)**

<b>Subject</b>	<b>Semester</b>	<b>Lectures/seminars or practical exercises (hours per week)</b>	<b>Name of lecturer</b>
Automation of Technological Processes	4 <sup>th</sup>	2/3	Girman
Information Systems in Industry	4 <sup>th</sup>	2/3	Košč
Production Management and Logistics	5 <sup>th</sup>	2/3	Girman
Business Process Modeling	5 <sup>th</sup>	2/2	Girman
Project Management	5 <sup>th</sup>	2/2	Kmec

#### 4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/seminars or practical exercises (hours per week)	Name of lecturer
Human Resources Management	5 <sup>th</sup>	2/2	Košč
Management of Companies and Enterprises	5 <sup>th</sup>	2/3	Kováčová, Kmec
Industrial Systems	5 <sup>th</sup>	2/3	Bober
Java Programming	5 <sup>th</sup>	2/3	Keusch
Automation of Technological Processes I	6 <sup>th</sup>	2/3	Girman
Information Systems in Industry	6 <sup>th</sup>	2/3	Košč
Production Management and Logistics	7 <sup>th</sup>	2/2	Girman
Simulation of Production Systems	8 <sup>th</sup>	2/3	Halušková Bober
Design of Manufacturing Systems	9 <sup>th</sup>	2/3	Girman
Software Quality Engineering	9 <sup>th</sup>	2/2	Bober
Business Process Modeling	9 <sup>th</sup>	2/2	Girman

#### 5 RESEARCH PROJECTS

- *Research of Basic Holonic Manufacturing Systems and Their Applicability.* Scientific Grant Agency (VEGA) No. 1/1093/04, duration: 2004-2006, co-ordinator: Michal Girman members: Peter Bober, Dominik Fabrici, Alexander Haščák, Peter Keusch, Peter Kmec, Jaroslav Skřivánek, activity: Design and test of holonic network according to typical operational material flow utilizing an optimized communication mechanism eliminating resource conflicts with respect for production processes' constraints.
- *Research of Basic Properties of Holonic Manufacturing Systems,* Institutional project of FEI TU Košice No. IV-4427, duration: 2003 - 2005, co-ordinator: Michal Girman, activity: Development of computer model of Holonic Manufacturing System, research on different control strategies.

## **6 CO-OPERATION**

### **6.1. Co-operation in Slovakia**

- University of Žilina
- Slovak University of Technology, Bratislava
- Genesis, Ltd. Prešov
- Embraco Slovakia Ltd., Spišská Nová Ves
- Kopex Ltd., Košice
- Cogent Ltd., Košice
- Slovak Union for Quality, Innovation and Design Q-IMPULZ, Košice

#### **6.1.1. Visitors to the Department**

- Ludmil A. Golemanov, Oy Optimatics Networks Ab, Finland
- Gejza Horváth, University of West Bohemia in Pilsen, Czech Republic

### **6.2. International Co-operation**

- VŠB-Technical University of Ostrava, Czech Republic
- West Bohemian University, Pilsen, Czech Republic
- University of Vaasa, Finland
- Fachhochschule Ulm, Germany

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

- Michal Girman: Fachhochschule Ulm, Germany, March 14 – 20; West Bohemian University, Pilsen, Czech Republic, Jun 8 – 10; VŠB-Technical University of Ostrava, Czech Republic, September 29 – 30
- Ľubomír Lengyel, National Institute of Public Health, Prague, Czech Republic
- Iraida Kolcunová, University of West Bohemia, Pilsen, Czech Republic, May 23 - 29
- Peter Košč, Ghent University, Belgium, Jun 3 – 6

### **6.3. Membership in International Organizations and Societies**

### **6.4. Membership in Slovak Organizations and Societies**

### **6.5. Contracts, International Scientific Projects**

- *Basics of Industrial Organization Management - Lifelong e-learning*, Contract for Embraco Slovakia, Ltd., Spišská Nová Ves, Slovakia.
- *SOCRATES Program: Higher education (ERASMUS)*, SOCRATES project, partner: University of Applied Sciences, Ulm (Germany), duration: 2003 - 2006, contact: Michal Girman, activity: Co-operation within the SOCRATES Program - students and teachers exchange.
- *SOCRATES Program: Higher education (ERASMUS)*, SOCRATES project, partner: University of Vaasa (Finland), duration: 2003 - 2006, contact: Kristína Zgodavová (Peter Bober), activity: Co-operation within the SOCRATES Program - students and teachers exchange program.

## 7 THESES

### **7.1. Masters Theses**

1. ANDREJKO, A.: *E-Portal for Support of Manager Skills Development* (Košč, P.)
2. BABIČ, M.: *Benchmarking Centre on the Internet* (Bober, P.)
3. BAČA, D.: *Client-Server Application for Project Management Support* (Košč, P.)
4. BRIANČIN, J.: *Modeling and Analysis of Educational Processes Considering a Support by Information System* (Bober, P.)
5. DIC, M.: *Identification of Customers Perspective by Keeping of Services in Wireless Internet Sector in Chosen Region.* (Žilková, J.)
6. FÜLEKY, F.: *On-line Education Processes Assessment according EFQM Excellence Model* (Bober, P.)
7. FURÁKOVÁ, K.: *Biomedical Process Failure Mode and Effect Analysis* (Zgodavová, K.)
8. GAZÍKOVÁ, D.: *Identification and Sorting of Factors for Company Analysis.* (Halušková, M.)
9. HALKO, I.: *CRM Systems for Customer Support* (Košč, P.)
10. HANDŽÁK, M.: *Design of the Control of a Production Line.* (Žilková, J.)
11. IVANKO, D.: *Software for Support of Sales of Specific Company Products.* (Haluška, J.)
12. KOHÚT, J.: *Implementation of Project Management in EU Projects* (Halušková, M.)
13. KÖPÖNCEI, P.: *Control and Visualization of Technological Processes by WinCC and Control Panel Programs – E-learning Modul* (Kováč, D)

14. KRAK, P.: *Analysis of Operations Management in Manufacturing.* (Halušková, M.)
15. MALIK, M.: *A Case Study in Project Management in Energy Supply* (Kmec, P.)
16. MARIŠČÁK, M.: *Design of the Control of a Production Line.* (Žilková, J.)
17. MATIS, L.: *Analysis of Processes in a Manufacturing Company.* (Kmec, P.)
18. MENŠÍK, P.: *Implementation of Quality Management Systems in Healthcare services.* (Zgodavová, K.)
19. MOSEJ, M.: *Management and Development of Human Resources* (Košč, P.)
20. NAGY, P.: *Dependance of Company Strategy on the Strategy of a Key Customer.* (Halušková, M.)
21. NAGY, T.: *Quality Assessment of Software Process* (Bober, P.)
22. PEREGRIN, P.: *Team Leading and Development of Team Work* (Košč, P.)
23. PODOLINSKÝ, J.: *Riskmanagement in Project Management* (Halušková, M.)
24. RAČÁK, M.: *Information System for Personnel Department Support* (Košč, P.)
25. SABO, D.: *A Method for Building Network Diagrams* (Kmec, P.)
26. SABOL, P.: *Simulation of a Production Based on Work Orders..* (Halušková, M.)
27. TOMKO, J.: *Multiagent Systems for Operations Management.* (Kmec, P.)
28. VALENT, P.: *Improvement of Production by Simulation* (Bober, P.)
29. VARGOČKO, J.: *Project Management in a Construction Company.* (Kmec, P.)
30. ZAGIBA, M.: *Modeling of Educational Processes* (Bober, P.)

## **8 OTHER ACTIVITIES**

- Editorial board for Journal „Kvalita Inovácia Prosperita” (Quality Innovation Prosperity), ISSN 1335-1745, Members: Michal Girman, Peter Bober, Peter Keusch, Ľubomír Lengyel
- STRAPING'04: Seminar and Meeting of Industrial Engineers, May 20 - 22, 2004, Herľany, Slovakia
- Conference INDUSTRIAL ENGINEERING '04 (Priemyselné inžinierstvo '04), November 7 – 8, 2004, Horný Smokovec, High Tatras, Slovakia
- Košč, P. (invited speaker) “Some Issues on e-Learning Implementation in EHEA with Respect to Virtual and Physical Mobility”, International Seminar Bologna and the Challenges of E-Learning and Distance Education, Ghent 2004, Belgium, Jun 3 – 6, <http://www.bologna-bergen2005.no/>

## **9 PUBLICATIONS**

### **9.1. Books**



## 9.2. Journals

1. BOBER, P. – GIRMAN, M.: Design and Simulation of a Holonic Assembly System. In: *Acta Electrotechnica et Informatica*. Vol. 4, No. 3, 2004, pp. 39-43, ISSN 1335-8243

## 9.3. Textbooks

## 9.4. Conferences

1. BOBER, P.: Rozvrhovanie výroby pomocou genetických algoritmov (Production Scheduling by Genetic Algorithm), In: *Priemyselné inžinierstvo '04*, Conference Proceedings, November 7 – 8, 2004, Horný Smokovec, Vysoké Tatry, Slovakia, pp. 35-43, ISBN 80-8073-190-X
2. FABRICI, D.: Distribuované databázy v celopodnikovom informačnom systéme (Distributed Databases in Enterprise-Wide Information Systems), In: *Priemyselné inžinierstvo '04*, Conference Proceedings, November 7 – 8, 2004, Horný Smokovec, Vysoké Tatry, Slovakia, pp. 142-148, ISBN 80-8073-190-X
3. FERKOVÁ, Ž. – FABRICI, D.: Parameter Identification of an Induction Motor by Genetic Algorithms. In: *Proceedings of the XII. International Symposium on Electric Machinery in Prague ISEM 2004*, Czech Republic, September 8 – 10, 2004, pp. 47-51, ISBN 80-01-01061-X
4. GIRMAN, M - FABRICI, D: Návrh multi-agentového skladového systému pomocou modelu rolí. In: *Proceedings of the conference Inteligentní systémy pro praxi*, Seč u Chrudimi, Czech Republic, September 30 – October 1, 2004, Ostrava: AD&M, konferenční servis, 2004, pp. 33-34, ISBN 80-239-3680-8
5. GIRMAN, M - FABRICI, D: Multi-agent application in storehouse control systems. In: *ICCC '2004 : Proceedings of 5th International Carpathian Control Conference*, Zakopane, Poland, May 25-28, 2004. Kraków: AGH-UST, Vol. 1, pp. 909-914, ISBN 83-89772-00-0
6. HALUŠKOVÁ, M. – KMEC, P.: Creating correct project network diagrams. In: *IPMA world congress on project management*, Budapest, Jun 19 – 20, 2004
7. HALUŠKOVÁ, M. – KMEC, P.: Metóda kritického reťazca v projektovom riadení (The Method of Critical Chain in Project Management). In: *Projektový manažment a jeho využitie v praxi, metódy a nástroje. Medzinárodný seminár*, Trnava, Jun 1, 2004, pp. 27 -30, ISBN 80-227-2055-0.
8. KEUSCH, P.: Multiagentové systémy (Multiagent Systems). In: *Priemyselné inžinierstvo '04*, Conference Proceedings, November 7 – 8, 2004, Horný

- Smokovec, Vysoké Tatry, Slovakia, pp. 179-184, ISBN 80-8073-190-X
9. KMEC, P. – STAROŇ, R. – HALUŠKA, J.: Odhad možností výrobných kapacít pomocou modelu procesu (Estimation of Production Capacity by a Process Model). In: *Modelování a optimalizace podnikových procesů. 7. ročník mezinárodního semináře*, Plzeň, Czech Republic, February 2, 2004. ISBN 80–7043–267–5.
  10. KMEC, P – SABOL, P.: Rozvrhovanie výrobných objednávok (Scheduling of Factory Orders). In: *Priemyselné inžinierstvo '04*, Conference Proceedings, November 7 – 8, 2004, Horný Smokovec, Vysoké Tatry, Slovakia, pp. 192-195, ISBN 80-8073-190-X
  11. Kmec, P a Krak, P.: Hodnotenie modelov plánovania výrobných objednávok (Evaluation of Models of Work Order Planning). In: *I. konferencia s medzinárodnou účasťou Manažment výrobných procesov 2004*. Prešov, Slovakia, September 18-19, 2004, pp.196-200, ISBN 80-8073-209-4
  12. KOŠČ, P – Sinay, J. – Kocur, D. – Benčo, S.: Implementácia e-vzdelávacích (e-learningových) technológií do výučby na TU Košice (Implementation of e-Learning Technologies at the TU Košice). In: *E-learn 2004*, Conference Proceedings, February 3 – 4, 2004, Žilina, Slovakia. Žilina: EDIS - vydavateľstvo ŽU, 2004, pp.225-229, ISBN 80-8070-190-3.
  13. KOŠČ, P.: uLern Studio - komplexné riešenie pre e-learning (uLern Studio as the Advanced e-Learning Solution). In: *E-learn 2004*, Conference Proceedings, February 3 – 4, 2004, Žilina, Slovakia. Žilina: EDIS - vydavateľstvo ŽU, 2004, pp.281-288, ISBN 80-8070-190-3.
  14. KOŠČ, P – Kocur, D. – Benčo, S.: Implementácia e-learning na TU Košice a systém zabezpečenia kvality kurzov (E-learning implementation at the TU Kosice and Quality Assurance System for Course Development), In: *BELCOM 2004, E-Learning v České a Slovenské republice, Stav a perspektivy*, Conference Proceedings, February 2 – 3, 2004, Praha, Czech Republic.
  15. KOŠČ, P – Kocur, D.: e-Portál pre e-vzdelávanie na Technickej univerzite v Košiciach. In: *DIVAI 2004, Dištančné vzdelávanie v aplikovanej informatike*, Conference Proceedings, May 20, 2004, Nitra, Slovakia. Nitra: Kat. informatiky FPV UKF v Nitre, 2004, ISBN 80-8050-691-4.
  16. KOŠČ, P – Sinay, J. – Kocur, D. – Benčo, S.: Experiences with e-Learning Implementation at the Technical University of Kosice. In: *ITHET 2004, 5th International Conference on Information Technology Based Higher Education and Training*, May 31 – Jun 2, 2004, Istanbul, Turkey. IEEE Catalog Number 04EX898C, ISBN 0-7803-8597-7.
  17. KOŠČ, P – Sinay, J. – Kocur, D. – Benčo, S.: Institutional Implementation of e-Learning Technologies in Higher Education. In: *ICETA 2004, 3rd International Conference on Emerging Telecommunications Technologies and Applications*,

- the Workshop on Organization and Management of Scientific, Technology and Industrial Parks*, Conference proceedings, September 16 – 18, 2004, Košice, Slovakia. Košice: Elfa, s.r.o., 2004, p. 451-456, ISBN 80-89066-85-2.
18. KOŠČ, P.: Implementácia e-learning technológií vo firemnom vzdelávaní (Implementation of e-Learning Technologies at the Workplace). In: *Priemyselné inžinierstvo '04*, Conference Proceedings, November 7 – 8, 2004, Horný Smokovec, Vysoké Tatry, Slovakia, pp. 204-211, ISBN 80-8073-190-X.
  19. KOŠČ, P.: Od firemného vzdelávania k učiacej sa organizácii (From Workplace Training to Learning Organization). In: *Priemyselné inžinierstvo '04*, Conference Proceedings, November 7 – 8, 2004, Horný Smokovec, Vysoké Tatry, Slovakia, pp. 212-219, ISBN 80-8073-190-X.
  20. ZGODAVOVÁ, Kristína - BOBER, Peter: Generating quality management role-play simulations in web environment. In: *ICETA 2004: 3rd International Conference on Emerging Telecommunications Technologies and Applications and the Workshop organisation and Management of Scientific, Technology and Industrial Parks*: Conference proceedings, September 16 – 18, 2004, Košice, Slovakia. Košice: Elfa, s.r.o., 2004, p. 277-283, ISBN 80-89066-85-2
  21. ZGODAVOVÁ, K. - BOBER, P.: Course Quality Professional. In: *5<sup>th</sup> International Conference Virtual University*, Conference Proceedings December 16 – 17, 2004, Bratislava, Slovakia, pp. 62 - 66, ISBN 80-227-2171-9