

## LABORATORY OF INDUSTRIAL ENGINEERING

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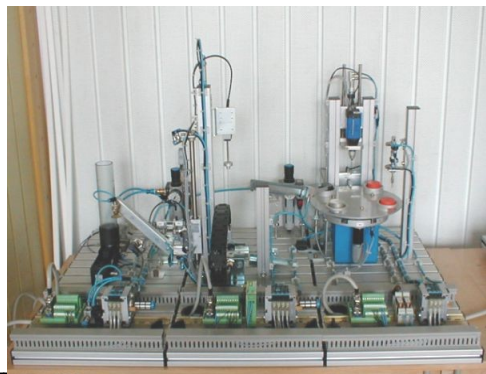
### 1 LABORATORY'S PROFILE

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 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:** doc. Ing. Michal Girman, PhD.  
doc. Ing. Marcela Halušková, PhD.  
doc. Ing. Kristína Zgodavová, PhD.

**Assistant Professors:** Ing. Peter Bober, PhD.  
Ing. Juraj Haluška, PhD.



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      Ing. Ján Skonc (part-time)

### **3 EQUIPMENT**

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

- Laboratory of Industrial Systems is designed for courses as Industrial Systems, Automation of Technological Processes.
- Laboratory of Information Technologies is designed for courses as Multimedia Techniques, Java Programming, Information Systems in Industry, and Simulation of Production 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 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), ALLEN BRADLEY (two controllers from SLC500 family), TELEMECANIQUE (TSX 07).
  - Timers and Semiconductor Contactor from CARLO GAVAZZI.
  - Plotters for educational purposes controlled by PC.
  - 10 personal computers
- The Laboratory of Information Technologies is equipped with:
  - personal computers
  - three servers
  - multimedia projectors
  - digital video camera, video grabber, scanner
  - Software:
    - ARIS tool for business process reengineering
    - Macromedia Director
    - J Builder for Java programming
    - SIMPLE++ simulation 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>
Multimedia Techniques	3 <sup>rd</sup>	2/3	Haluška
Industrial Systems	3 <sup>rd</sup>	2/3	Girman, Bober
Human Resources Management	3 <sup>rd</sup>	2/2	Girman, Košč

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

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

#### 5 RESEARCH PROJECTS

- *Research of Basic Properties of Holonic Manufacturing Systems, Institutional project of FEI TU Košice No. IV-4427, duration: 2000 - 2002, 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 and Trnava
- Boarding School for Disabled People, Košice

- Genesis, Ltd. Prešov
- ELBA, a.s. Kremnica
- Embraco Slovakia Ltd., Spišská Nová Ves
- Kopex Ltd., Košice.
- Raciostyl a.s., Košice
- Slovak Union for Quality, Innovation and Design Q-IMPULZ, Košice

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

- Jarl Marklund, Solviks Folk High School, Sweden
- Timo Rautakoura, University of Vaasa, Finland
- Josu Takala, University of Vaasa, Finland
- Achim Bubbenzer, Fachhochschule Ulm, Germany
- Bernd Lange, Fachhochschule Ulm, Germany
- Ulrich Petri, Fachhochschule Ulm, Germany
- Gejza Horváth, University of West Bohemia in Pilsen, Czech Republic
- Lilia Dvořáková, 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
- University of Salerno, Italy
- Fachhochschule Ulm, Germany
- Solviks Folk High School, Sweden
- Sundsgårdens Folk High School, Sweden
- Kristinehamns Folk High School KPS, Sweden
- Telecentres Powys, United Kingdom
- Goldratt UK, Maidenhead, United Kingdom

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

- Michal Girman: Fachhochschule Ulm, Germany, 21 – 24 Jul; University of West Bohemia, Pilsen, Czech Republic, 26 – 28 November
- Juraj Haluška: University of West Bohemia, Pilsen, Czech Republic, 26 – 28 November
- Ľubomír Lengyel: Volkswagen AG, Wolfsburg, Germany, 27 – 30 April; Volkswagen of Amerika, Detroit, USA, 1 Jul – 10 December

- Peter Košč: Solviks Folkhogskola, Kage, Sweden, 7 - 9 March; University of Salerno, Italy 17 – 23 September
- Kristína Zgodavová: University of West Bohemia, Pilsen, Czech Republic, 19 – 23 January; University of Vaasa, Finland, 6 – 23 March

### 6.3. Membership in International Organizations and Societies

- Kristína Zgodavová: Czech Organization for Quality Personnel Accreditation DTO Ostrava
- Kristína Zgodavová: Editorial Advisory Board for the C&C International Journal

### 6.4. Membership in Slovak Organizations and Societies

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

### 6.5. Contracts, International Scientific Projects

- *Basics of Industrial Organization Management - Lifelong e-learning, Contract for Embraco - Slovakia, Spišská Nová Ves, Slovakia.*
- *SOCRATES Program: Higher education (ERASMUS), SOCRATES project, partner: University of Applied Sciences, Ulm (Germany), duration: 2002 - 2003, 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: 2002 - 2003, contact: Kristína Zgodavová, activity: Co-operation within the SOCRATES Program - students and teachers exchange program.*
- *SOCRATES GRUNDTVIG: ACTIVE - „More Active Citizenship for Disabled by Distance Education“, No 89903-CP-1-2001-1-SE-GRUNDTVIG-G1, duration: 2001 - 2003, contact: Peter Košč, activity: to support more active citizenship for persons with learning disabilities by means of special pedagogically adapted distance courses, web-learning environments, and learning centres. Retraining of teachers and development of special pedagogical ODL handbook.*

## 7 THESES

### 7.1. Masters Theses

1. BOKOR, Š.: *Design of Assembly Line Control*. (Girman, M.)
2. BOŽOVÁ, M.: *Computer Support of Scheduling in Manufacturing*. (Girman, M.)
3. DUNDA, V.: *Utilisation of Simulation in Production Planning*. (Bober, P.)
4. FABRICI, D.: *Computer Support for Fractal Manufacturing*. (Girman, M.)
5. FENČÁK, M.: *Computer Support of Analysis of Time Petri Nets*. (Girman, M.)
6. FRANEK, J.: *Study of Quality Management System for Small Enterprise*. (Zgodavová, K.)
7. HRIVŇÁK, M.: *Benchmarking Study of European Steel Plants*. (Zgodavová, K.)
8. JACKOVÁ, A.: *Utilization of Quality, Efficiency and Effectiveness Balanced Score Card for Quality Management Role Play Simulation*. (Zgodavová, K.)
9. KORTIŠ, M.: *Simulation of Control of Technological Process By WIN CC Program*. (Kováč, D.)
10. KOVÁČIK, M.: *Management of Technological Unit MPS Via Programmable Automats SIMATIC*. (Bober, P.)
11. MÁJ, R.: *Utilization of Statistical Methods for Evaluation of Technological Process Capability of Enamelled Steel Sheets Used in Bath Production*. (Zgodavová, K.)
12. MARCHEVSKÝ, M.: *Tools of Strategic Management*. (Halušková, M.)
13. MERČIAK, J.: *Utilization of Data Warehouses in Quality Management in Small and Medium Enterprises*. (Zgodavová, K.v)
14. MIKULÁŠ, I.: *Software for Calculation of Time Between Operations*. (Bober, P.)
15. PAČUTA, M.: *Human Resource Management From the Perspective of Strategic Management*. (Halušková, M.)
16. SZOLGA, T.: *Improving Company's Performance Through Balanced Scorecard*. (Košč, P.)
17. ŠVEC, R.: *Multimedia Teaching Program for the Support of the Course Multimedia Techniques – Part: Software Support*. (Haluška, J.)
18. TAMÁŠ, L.: *E-Commerce on Internet*. (Košč, P.)
19. TEŠLÁ, R. P.: *Computer Support for Balancing of Production Lines*. (Girman, M.)
20. TKÁČ, P.: *Identification and Modelling of Effect on Education of Employees for Organisation Prosperity*. (Zgodavová, K.)
21. VINCE, T.: *Software Visualization of Quality Management Role Play Simulation Using Java Swing Components*. (Zgodavová, K.)
22. ZAMBA, M.: *Multimedia Teaching Program for the Support of the Course Multimedia Techniques – Part: Technical Support*. (Haluška, J.)

## **8 OTHER ACTIVITIES**



- Editorial board for Journal „Kvalita Inovácia Prosperita” (Quality Innovation Prosperity), ISSN 1335-1745, Members: Kristína Zgodavová, Michal Girman, Peter Bober, Peter Keusch, Ľubomír Lengyel
- Invited lectures abroad:
  - Kristína Zgodavová, Quality and Safety Management - Basic Course and Advanced Course, University of Vaasa, Finland
- STRAPING'03: Seminar Meeting for Industrial Engineers, 15 - 17 May, Herľany, Slovakia

## **9 PUBLICATIONS**

### **9.1. Chapters in Books**

1. KOŠČ, P. – ĎORĐOVÁ, B.: Weblernangebote für Lernbehinderungen. In: AKTIV MIT IT – Erfahrungen von menschen mit lrnbehinderungen auf dem weg zu einem aktiveren leben. Wien: Lernfeld Sprache, 2003, ISBN 3-9501318-1-7, p. 46-61

### **9.2. Journals**

1. GIRMAN, M. – KMEC, P.: Aukcia v holonických výrobných systémoch a ich modelovanie v prostredí ZEUS (Auctions in Holonic Manufacturing Systems and Their Modeling in ZEUS). In: *Kvalita Inovácia Prosperita (Quality Innovation Prosperity)*, 2003, Vol. 7, No. 1, p. 73-85.
2. KMEC, P.: Management by Constraints. In: *Kvalita Inovácia Prosperita (Quality Innovation Prosperity)*, 2002, Vol. 6, No. 1, pp. 46-51.

### **9.3. Textbooks**

1. BOBER, P.: Inžinierstvo kvality softvéru (Software Quality Engineering). e-learning course, <http://ulern.fe.i.tuke.sk>
2. KOŠČ, P.: Informačné systémy v priemysle (Information Systems in Industry). e-learning course, <http://ulern.fe.i.tuke.sk>
3. GIRMAN, M.: Riadenie výroby a logistika (Production control and logistics). e-learning course, <http://ulern.fe.i.tuke.sk>
4. GIRMAN, M.: Automatizácia technologických procesov (Automation of Technological Processes). e-learning course, <http://ulern.fe.i.tuke.sk>

#### 9.4. Conferences

1. BOBER, P: Different types of simulation in industry. In: 3. Internal Scientific Conference of the Faculty of Electrical Engineering and Informatics: Proceedings 3. ISC'2003, May 28, 2003 Košice, Slovak Republic. Košice: Elfa, 2003. p. 101-102, ISBN 80-89066-65-8.
2. GIRMAN, M. – KEUSCH, P. – FABRICI, D.: Použitie genetických algoritmov pri rozvrhovaní výroby (Production Scheduling by Genetic Algorithm). In: Proceeding of conference Průmyslové inženýrství, Plzeň, Czech Republic, 27 November 2003. p. 38-44, ISBN 80-7043-242-X
3. Halušková, M. – Kmec, P.: Riadenie podľa obmedzení (Management by Constraints). In: Proceeding of conference Průmyslové inženýrství, Plzeň, Czech Republic, 27 November 2003. p. 45, ISBN 80-7043-242-X
4. KOŠČ, P. Special Courses for Disabled on Platform uLern. In: Sborník příspěvků ze semináře a soutěže e-learning 2003, Hradec Králové, 5 - 6 November 2003, ISBN 80-7041-965-2, p. 76-83
4. ZGODAVOVÁ, K: Quality Management Role Play Simulation for Company Excellence. In: Business Excellence, Proceedings of the 8th international conference on ISO&TQM : Montreal Kanada, 23.04.-25.04.2003. Hong Kong: HK 5S Association, 2003. p. 23-30. ISBN 962-86107-7-5.