STU FEI

SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA
FACULTY OF ELECTRICAL ENGINEERING
AND INFORMATION TECHNOLOGY

2015

ANNUAL REPORT

SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA

FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

http://www.fei.stuba.sk

Faculty Profile

The Faculty of Electrical Engineering and Information Technology is one of the seven faculties of the Slovak University of Technology (STU), the oldest and largest university of technology in Slovakia. Its characteristics include modern and internationally accepted university study, intensive scientific, development and research activities as well as cooperation with academic and industrial partners in Slovakia and abroad.

The beginnings of the Faculty of Electrical Engineering and Information Technology are dating back to the year 1940, when the Department of Mechanical and Electrical Engineering at the Slovak University of Technology was established by the Government Decree. The history of higher education in Slovakia in the electrical engineering field began by the opening the Department of Electrical Engineering in the year 1941. In the year 1994, the Faculty of Electrical Engineering was renamed to the Faculty of Electrical Engineering and Information Technology.

Within the long term, the Faculty of Electrical Engineering and Information Technology of STU ranks among the largest educational institutions in Slovakia, and in the area of education of technical engineers has a long tradition. The Faculty of Electrical Engineering and Information Technology of STU is also the largest educational faculty focused on the raising of the university-educated professionals in the field of electrical engineering, informatics and information technologies. Study programs with their composition reflect the technical development as well as trends in industry and society. They create an interlinked system that highly covers the needs of the labor market in Slovakia and abroad. Many of our graduates have found application as top professionals in the respective field and perform also top management positions.

Besides gaining high-quality knowledge during the study, students are frequently involved in the process of national and international research projects and also projects for commercial practice. This may begin their careers already during their studies. Thereby, students of the faculty are able to receive the possibility to complete a part of the study at foreign universities, with which the Faculty of Electrical Engineering and Information Technology signed agreements on bilateral cooperation. The Faculty at the same time develops abroad cooperation with universities in research and technological activities. The year after year, a relatively large group of students completes semester or two at one of the technical university abroad.

By completing any of the Faculty study programs, students can gain excellent potential for a good quality job in a wide spectrum of professions. Employment figure of the Faculty graduates comes up to almost 100% every year. This means a great prospect ahead for students within Slovakia and European Union.

The Faculty of Electrical Engineering and Information Technology of STU consists of ten institutes:

- **Institute of Automotive Mechatronics (IAMT)** was established on July 1, 2013.

- **Institute of Computer Science and Mathematics (ICSM)** was established on May 1, 2011 and created from: Department of Applied Informatics and Information Technology and Department of Mathematics.
- **Institute of Control and Industrial Informatics (ICII)** was established on March 3, 2006 by a fusion of three departments: Department of Automation and Control, Department of Automatic Control Systems and Department of Economics and Management, the last one being detached from the ICII in April 1, 2007.
- **Institute of Electrical Engineering (IEE)** was established on May 1, 2011 and created from: Department of Electromagnetic Theory and Department of Measurement.
- **Institute of Electronics and Photonics (IEP)** was established on May 1, 2011 and created from: Department of Microelectronics and Department of Radioelectronics.
- **Institute of Nuclear and Physical Engineering (INPE)** was established on May 1, 2011 and created from: Department of Physics and Department of Nuclear Physics and Technology.
- **Institute of Power and Applied Electrical Engineering (IPAEE)** was established on May 1, 2011 and created from: Department of Electrical Machines and Devices, Department of Electrical Power Engineering, Department of Electrotechnology and partially Department of Mechanics.
- **The Institute of Telecommunications (IT)** was established on May 1, 2011 and was created from: Department of Telecommunications.
- **Institute of Communication and Applied Linguistics (ICAL)** was established on April 1, 1991.
- **Technological Institute of Sports (TIS)** was established in year 1993.

The primary goal of Faculty institutes and is to link high quality education with research and development. Faculty of Electrical Engineering and Information Technology of STU in Bratislava has sustained its position as a major academic centre of research and development.

Information and telecommunication systems and technologies, electronics and electrical engineering and their applications, automated systems and methods of their control, power and nuclear engineering, application mechatronics are considered as the most important scientific and research areas at FEI STU. Consequently, science and research activities at the Faculty of Electrical Engineering and Information Technology are primarily oriented on the above mentioned fields.

As far as grant success rate is concerned, the Faculty belongs to the most successful institutions in Slovakia. This position must result in the quality that will be reflected in both national and international research projects, publications in CC international scientific journals, quotations, patents s well as participation of the Faculty teachers and researchers in practical applications of latest technologies and in creating new development concepts of different sectors of Slovak national economy.

In the area of science and research, the Faculty is also focused on funding science and research by involving in all forms of national grant schemes such as VEGA, KEGA, APVV projects as well as competence centers and centers of excellence within the EU structural funds. The Faculty is also significantly involved in bilateral and international projects (e.g. Framework programmes, Horizont2020, NATO, ESA, etc.), government contracts as well as by funding from other sources. The main focus is also placed to involve undergraduate and postgraduate students in research at the Faculty and in research centers in Slovakia and abroad. The number of PhD. students, who successfully completed their studies at FEI also represents a measurable indicator of the quality. Quality is also reflected in individual teachers' and researchers' efforts the Faculty can benefit from.

STUDY PROGRAMS AND FACULTY MANAGEMENT

Bachelor (Bc.) programs:

Applied Informatics

Automotive Electronics (until 31.8.2015)

from 1.9.2015 Automotive Mechatronics

Electrical Engineering

Electronics

Industrial Informatics (until 31.8.2015)

from 1.9.2016 Robotics and Cybernetics

Telecommunication

Master (Ing.) programs:

Applied Informatics

Applied Mechatronics

Cybernetics

Measurement and Information Technology

Microelectronics

Physical Engineering

Power Engineering

Radioelectronics

Robotics

Telecommunication

PhD. programs:

Applied Informatics

Applied Mathematics

Automation and Control

Condensed Matter Physics and Acoustics

Cybernetics

Electromagnetic Theory

Electrotechnology and Materials

Heavy Current Engineering

Measurement Science

Mechatronics

Metrology

Microelectronics

Nuclear Power Engineering

Faculty Management

Dean:

prof. Dr. Ing. Miloš Oravec

Vice-deans:

prof.Ing. Viera Stopjaková, PhD.

Vice-dean for Science and Research (from 1.3.2015)

doc. Ing. Mikuláš Bittera, PhD.

Vice-dean for Bc. Study (from 1.3.2015)

Dr.rer.nat. Martin Drozda

Vice-dean for foreign relations (from 1.3.2015)

doc.Ing. Eva Miklovičová, PhD.

Vice-dean for MSc.and PhD Study (from 1.3.2015)

Vice-deans (until 28.2.2015):

doc. Ing. Vladimír Jančárik, PhD.
doc. Ing. Jarmila Pavlovičová, PhD.
doc. Ing. Milan Žiška, PhD.

Scientific Council

prof. Ing. Robert Redhammer, PhD.

prof. Ing. Gregor Rozinaj, PhD.

prof. Ing. Vladimír Slugeň, DrSc.

prof. Ing. Viktor Smieško, PhD.

prof. Ing. František Uherek, PhD.

External members (from 1.3.2015)

prof. Ing. Milan Dado, PhD.

doc. Ing. Ivan Hejda, PhD.

Ing. Jozef Holjenčík, PhD.

prof. RNDr. Jozef Masarik, DrSc.

doc. Ing. Jozef Novák, DrSc.

doc. Ing. Milan Tyšler, PhD.

prof. Ing. Liberios Vokorokos, PhD.

Academic Senate

Chairman:

prof. Ing. František Uherek, PhD.

Chamber of employees

Chairman: doc. Ing. Mikuláš Bittera, PhD. (until 28.2.2015)

Chairman: doc. Ing. Danica Rosinová, PhD. (from 21.4.2015)

PhDr. Jarmila Belasová

doc. Ing. Anton Beláň, PhD.

Ing. Pavol Bisták, PhD.

doc. Ing. Mikuláš Bittera, PhD. (until 28.2.2015)

PaedDr. Aleš Dunajčík

Ing. Róbert Hinca, PhD.

prof. Ing. Peter Hubinský, PhD.

Ing. Erik Chromý, PhD.

Ing. Mgr. Matúš Jókay, PhD.

Ing. Branislav Korenko, PhD. (from 24.3.2015)

Ing. Peter Poljovka, PhD.

doc. Ing. Rastislav Róka, PhD.

doc. RNDr. Boris Rudolf, PhD.

doc. Ing. Danica Rosinová, PhD.

prof. Ing. Viera Stopjaková, PhD. (until 28.2.2015)

prof. Ing. František Uherek, PhD.

doc. Ing. Elemír Ušák, PhD.

doc. Ing. Ján Vajda, CSc.

prof. Ing. Anton Vitko, PhD.

doc. Ing. Milan Žiška, PhD. (from 24.3.2015)

CONTENTS

INSTITUTE OF AUTOMOTIVE MECHATRONICS

http://www.uamt.fei.stuba.sk/

	Director of the Institute**:** **prof. Ing. Mikuláš Huba, PhD.**	**Tel: +421-2-602 91 771** **Fax: +421-2-654 29 734** **e-mail: mikulas.huba@stuba.sk**
	Vice- Director for Science and Research: prof. Ing. Justín Murín, DrSc. **Vice- Director for Teaching**: prof. Ing. Štefan Kozák, PhD.	
	Secretary: Katarína Beringerová **Office**: Katarína Kermietová	
	Till 30 April 2015: **Director of the Institute**: prof. Ing. Štefan Kozák, PhD. **Vice- Director for Science and Research**: prof. Ing. Justín Murín, DrSc. **Vice- Director for Teaching**: prof. Ing. Mikuláš Huba, PhD.	

GENERAL INFORMATION

The Institute of Automotive Mechatronics (IAMT) at the Faculty of Electrical Engineering and Information Technology was established in July 2013 to bring into focus research and education in Applied mechatronics, Automotive mechatronics, e-Mobility and Automation. Human potential and a long-lasting research tradition in automation, mechanics, materials science, information and communication technologies are key attributes of the Institute.

IAMT consists of 4 departments:

Department of Applied Mechanics and Mechatronics,

Department of Information, Communication and Control Systems,

Department of Electronics, Microcomputers and PLC Systems,

Department of e-Mobility, Automation and Drive Systems.

The Institute of Automotive Mechatronics (IAMT) offers modern courses in automation, mechanics, electronics and computer science. Its research and teaching activities are directed at development and application of modelling, simulation and control methods for mechatronic engineering systems and processes. IAMT has a rich experience in the industry – academia cooperation as well as in the international cooperation, which is beneficial for preparation of and launching new projects as well as for development of modern courses in Mechatronics.

Currently, IAMT offers study in three study programs: Automotive mechatronics (Bachelor's degree – Bc.), Applied mechatronics and e-Mobility (Engineer's degree - Ing.), and Mechatronic systems (Doctor of Philosophy degree - PhD.). These study programs aim at teaching students to design, develop and apply mechatronic

systems by using latest knowledge in natural sciences, mechanics, electronics, and information, communication and control technologies. Curricula of the study programs include modern methods of mathematics, physics, modelling and simulation, mechanics, electronics, sensor systems, communications and information technologies, automatic control and mechatronic systems design. The study in both Bc. and Ing. study programs is organized in two study branches: 1. Automotive Mechatronics and e-Mobility and 2. Applied Mechatronics and Automation. Graduates can find jobs in research, development and design of complex mechatronic systems in various application areas (automotive industry, transportation systems, manufacturing processes, power engineering, consumer and control electronics, nanotechnology, health care, services industry, etc.).

Study in both Bc. and Ing. degree study programs contains two branches:

1. Automotive Mechatronics and e-Mobility - deals with Mechanics, Electronics, Control and ICT technologies in electro and motor vehicles including their ever-increasing complexity. In automotive mechatronic subsystems, e.g. braking and steering systems, automatic transmissions, electric powertrain technologies, plug-in hybrids, hydrogen fuel cell vehicles, suspension systems, electronic systems and engine management exhibit complex electronic-mechanic interactions. Therefore architecture of individual mechatronic subsystems has to be designed so as to guarantee optimal function of the electro and motor vehicle with respect to reliability, driving performance, comfort and environmental impact.

2. Applied Mechatronics and Automation - synthesizes the disciplines of Mechanical, Electrical, Computer and Control Engineering to provide a comprehensive platform for various technologies and tools to develop mechatronic devices. Education in this study branch is focused on development of innovative mechatronic systems in consumer electronics, new materials, smart sensors and actuators, and on implementation of automatic control systems that represent heart of each mechatronic system.

Research in the Institute of Automotive Mechatronics is focused on folowing research areas:

- e-Mobility - basic and applied research of concepts, technology and functional systems, including advanced electronic control of electric drives of the third and higher generations of future electric vehicles, basic and applied research of power sources for electromobiles of third generation based on renewable sources, basic and applied research of autonomous systems for electric operation in automated transport systems

- applied and automotive mechatronics - research and development of mechatronic systems for vehicles, research and development of new actuators and sensors and their application to mechatronic systems, research and development of mechatronic systems for complex automation technology and manufacturing processes in automotive production

- automation for mechatronic applications - research and development of new methods and algorithms for robust and optimal control of mechatronic systems using optimization methods and computational intelligence, implementation of algorithms for fast dynamics process control using embedded control systems, PLC systems and FPGA platforms, research and development of autonomous flying machine control

- modeling and simulation multiphysical processes - basic research in computer modeling of mechatronic components and systems from SMART, FGM and MFM materials, applied research in the field of multiphysics modeling and simulation of mechatronic components and systems, applied research in the field of multiphysics models of energy systems

- ICT in mechatronics - basic and applied research in information and signal processing (FPGA, DSP) in connection with mechatronic applications, research and development of communication systems for automobiles and communication and navigation systems, applied research in the field of remote control of mechatronic systems, in the field of web and mobile platforms and in autonomous systems.

Departments of the Institute of Automotive Mechatronics

Department of Applied Mechanics and Mechatronics

Head of the department	prof. Ing. Justín Murín, DrSc.
Deputy-head	doc. Ing. Vladimír Kutiš, PhD.

Department of Information, Communication and Control Systems

Head of the department	doc. Ing. Danica Rosinová, PhD.
Deputy-head	doc. Ing. Katarína Žáková, PhD.

Department of Electronics, Microcomputers and PLC Systems

Head of the department	doc. Ing. Peter Drahoš, PhD.
Deputy-head	Ing. Igor Bélai, PhD.

Department of E-Mobility, Automation and Drive Systems

Head of the department	prof. Ing. Mikuláš Huba, PhD.
Deputy-head	prof. Ing. Viktor Ferencey, PhD.

I. STAFF

Professors	Viktor Ferencey, Mikuláš Huba, Štefan Kozák, Justín Murín
Associate Professors	Peter Drahoš, Vladimír Goga, Alena Kozáková, Vladimír Kutiš, Peter Podhoranský, Danica Rosinová, Ján Šturcel, Katarína Žáková
Assistant Professors	Igor Bélai, Richard Balogh, Pavol Bisták, Martin Bugár, Ján Cigánek, Mária Hypiusová, Štefan Chamraz, Marek Kukučka, Juraj Matej, Jakub Osuský, Juraj Paulech, Tibor Sedlár, Peter Ťapák
Research Workers	Peter Fuchs, Róbert Fric, Juraj Hrabovský, Vladimír Popelka
Technical Staff	Katarína Beringerová, František Erdödy, Katarína Kermietová (office)
PhD. Students	Vladislav Bača, Peter Balko, Jakub Bohuš, Branislav Dvorščák, Gabriel Gálik, Roman Gogola, Alojz Gomola, Miroslav Gula, Peter Guzmický, Oto Haffner, Tomáš Huba, Jakub Jakubec, Zoltán Janík, Igor Jakubička, Michal Kocúr, Ondrej Kolimár, Róbert Krasňanský, Erik Kučera, Tomáš Malatinec, Filip Noge, Martin Nováček, Peter Olšovský, Anton Pytel, Eduard Ribar, Dávid Soós, Peter Valach
PhD. Students (external form)	Florian Dietze, Peter Karas, Vladimír Popelka, Tibor Sedlár

II. EQUIPMENT

II.1 Teaching and Research Laboratories

The 3 specialized joint laboratories at FEI STU were established for education of students in the study programs Automotive Mechatronics (Bc.), Applied Mechatronics and e-Mobility (Ing.) and Automotive Mechatronics (MSc.).

Equipment: The laboratories are materially supplied from joint resources of the FEI STU and the supporters: Schneider Electric Slovakia, Ltd., PSA Peugeot Citroën Slovakia, and Volkswagen Slovakia, a.s. – suppliers of mechatronic components, systems and equipment. Teaching modules for automotive mechatronics were provided by the LITO –DIDAKTIC company.

Laboratories were built for teaching courses in automotive and applied mechatronics, electronics, comunication technology, automation, numerical engineering methods and applied mechanics. They are equipped with modules of functional parts of modern automotive mechatronic systems that can be connected to a distributed networked control and communication system. Individual modules of mechanical and electronic components and systems of a vehicles are connected to computers, sensors and actuator systems (ABS, ASR, navigation systems, combustion control, control unit of the motor).

Demonstrations activities in joint laboratories:

- Trainings for PSA (for Schneider Electric) at 3 levels: experts, maintenance, operators)

- Assembling – design algorithms, control and visualisation (welding, painting and assembly processes)

- Diagnostics software design (fault diagnostic, components and subsystems, reconfiguration processes)

Other laboratories:

- Centre of Designing and Computational Mechanics
- Industrial Automation Laboratory
- Joint Laboratories of Applied Mechatronics
- Laboratory of Embedded Control Systems
- Laboratory of PLC
- Laboratory of Modeling and Simulation for Mechatronic Systems
- Laboratory of Thermopower Machines and Devices
- Mechatronics Laboratory
- Multimedia Systems Laboratory
- Nonlinear Systems Laboratory
- Research laboratory in Biomechatronics
- Remote experiment Laboratory
- Sensors and Actuators Laboratory

II.2 Special Instruments, Equipment, Computers and Tools

- Mechanical Setup Position Control Plant
- Laboratory Models: Thermal Plant, Thermo-optical Model, Magnetic Levitation Syst., Two - Tank System, Three - Tank System, Two - Tank System with Two Pumps, Shell and Tube Heat Exchanger, Propeller

Pendulum, ABS System, Ultimate Robot Kit-Blue (Makeblock), mDrawBot 4-in-1 Drawing Robot by Makeblock

- Digital Signal Processor Board for Real-Time Control
- Embedded MicroComputer Systems development tools for Atmel, Freescale, Intel
- Programmable Controllers: MicroLogix, Honeywell, Modicon
- Networked Control System with CAN Bus & Ether CAT
- DC Servo Drive System
- HW: ControlLogix PLC, CompactLogix, HMI
- XCode Developer Tool
- Spartan-6 FPGA SP601 Evaluation Kit
- Measuring device Quantum X
- Insert Press Monitoring System DMF-P V3
- Boiler Gas Analyser Industrial Combustion Optimiser Neotronics
- Experimental Impulse Turbine F800 - Hilton, Ltd. England
- Advantech PC-LabCard PCI 1710 with equipment
- Digital Osciloscope RIGOL DS1052E
- Digital Osciloscope RIGOL DS1102D
- Waveform Generator RIGOL DG1012
- Horizon Fuel Cell Software Adaptor
- ACU point impedance map meter
- BioLab ATR meter
- Iridoscope
- Precise Registration / Calibration Electricity Meter
- Precise Digital Network Analyser and Standard Meter PEM 6711
- DL8000 Digital Deep Level Transient Spectrometer, BIO-RAD system
- Microwave Network Analyser HP 8408 S + HP83421A Lightwave Source (20 GHz)
- Semiconductor Parameter Analyzer, Agilent 4155C
- Arbitrary Function Generator TEKTRONIX AFG3252 (240 MHz, 2 channel)
- Digital Oscilloscope TEKTRONIX TDS20225
- Digital Oscilloscope TEKTRONIX (200 MHz, 4 channel)
- Automatic Impedance Matching System for High-power Industrial Applications
- CST - 3D Structure Electromagnetic Simulator (University licence)
- Power Line Communication Modem Kits
- 3D Printer
- DC Power Supply LXI CPX 400DP
- Electic Porsche Carrera 911 control unit
- Nexys™4 Artix-7 FPGA Board
- PmodACL2 - 3-Axis MEMS Accelerometer
- PmodGYRO 3-Axis Digital Gyroscope
- PmodLS1 - Infrared Light Detector IR Proximity Sensor
- PmodHB5 - H-bridge w/ feedback inputs
- PmodOLED - Organic LED Graphic Display
- PmodOD1 - Open drain output
- Line-Following Servo Robot Kit
- PmodSTEP - Stepper Motor Driver
- GWS Servo Kit - Continuous Rotation
- PmodKYPD - 16-Button Keypad
- PmodCON3 - R/C servo connectors
- Resistor Ladder D/A Converter
- Two 12-bit D/A outputs
- PmodAD1 - Two 12-bit A/D inputs
- USB Oscilloscope
- Development mechatronic system (e-scooter)
- Research and Development of the first Electrical Traction System for Kart

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Introduction into Engineering (for Applied Informatics)	(1st sem., 2-2h)	K. Žáková
Introduction into Engineering (for Robotics and Cybernetics)	(1st sem., 2-2h)	K. Žáková
Introduction into Engineering (for Automotive Mechatronics)	(1st sem., 2-2h)	Š. Kozák, J. Paulech
Introduction into Engineering (for Power Engineering, Electrical, Nuclear and Physical Engineering)		
	(1st sem., 2-2h)	Š. Kozák, J. Paulech
Introduction into Engineering (for Electronics)	(1st sem., 2-2h)	P. Podhoranský, P. Bisták
Introduction into Engineering (for Telecommunications)	(1st sem., 2-2h)	P. Podhoranský, P. Bisták
Mechanics (for Automotive Mechatronics)	(3rd sem., 3-2h)	J. Murín
Mechanics (for Power Engineering, Electrical, Nuclear and Physical Engineering)	(3rd sem., 3-2h)	J. Murín
Instrumentation of Control Systems	(4th sem., 3-2h)	J. Šturcel, Š. Chamraz
Design of Web Applications	(4th sem., 2-2h)	K. Žáková
Web technologies 1	(5th sem., 2-2h)	K. Žáková
Automatic Control Systems 2	(5rd sem., 2-3h)	M. Huba
Automotive Electronic Systems	(5rd sem., 3-2h)	Š. Chamraz, P. Podhoranský
Components and Systems in Mechatronics	(5rd sem., 2-3h)	J. Murín, J. Matej
Continuum Mechanics (Faculty of Civil Eng.)	(5rd sem., 2-2h)	J. Murín
Design of Automobiles and Electromobiles	(5rd sem., 3-2h)	V. Ferencey, J. Matej
Design of Electronic Systems	(5rd sem., 2-2h)	Š. Chamraz, R. Balogh, P. Fuchs
Modeling and Simulation Using Matlab	(5rd sem., 2-2h)	D. Rosinová, A. Kozáková
PLC Systems in Mechatronics	(5rd sem., 2-2h)	P. Fuchs, J. Osuský
Automation 2	(6th sem., 2-2h)	M. Žalman, I. Bélai, J. Dúbravský
Design of Vehicles	(6th sem., 2-2h)	J. Matej
Industrial Communication Bus	(6th sem., 2-2h)	P. Drahoš
Industrial Communication Systems	(6th sem., 3-2h)	M. Žalman, I. Bélai
Mechanics (for Automotive Electronics)	(6th sem., 2-2h)	J. Murín
Nonlinear Systems	(6th sem., 2-3h)	M. Huba

III.2 Graduate Study (Ing.)

Automotive and electromobile transmission systems	(1st sem., 2-2h)	V. Ferencey, M. Bugár
CAE of Mechatronic Systems	(1st sem., 2-3h)	V. Kutiš, V. Goga
Coupled field analysis	(1st sem., 2-2h)	V. Kutiš
Development programming environment for mechatronic systems	(1st sem., 2-3h)	P. Fuchs
Finite element method	(1st sem., 2-3h)	J. Murín

Optimization in mechatronics	(1st sem., 2-2h)	D. Rosinová
Pneumatic and Hydraulic Systems in Mechatronic Applications	(1st sem., 2-2h)	V. Kutiš, V. Goga
Designing by higher CAD systems	(2nd sem., 2-2h)	J. Murín, R. Fric
Modeling and Simulation of Mechatronic Systems	(2nd sem., 2-3h)	Š. Kozák, D. Rosinová
Multimedia	(2nd sem., 2-3h)	M. Huba, P. Bisták
Multimedia in control	(2nd sem., 3-2h)	M. Huba, P. Bisták
Multiphysical processes in Mechatronics	(2nd sem., 2-3h)	V. Kutiš
Power Units of Automobiles	(2nd sem., 2-2h)	V. Ferencey
Radio Communication	(2nd sem., 3-2h)	P. Podhoranský
Signal Processors	(2nd sem., 3-2h)	P. Fuchs
Signal Recording	(2nd sem., 3-2h)	P. Podhoranský, O. Ondráček
Sensor Systems in CIM	(2nd sem., 3-2h)	J. Šturcel, R. Balogh
Telemedicine Technique	(2nd sem., 3-2h)	D. Ďuračková, M. Kukučka
Advanced control methods for mechatronic systems	(3rd sem., 3-2h)	Š. Kozák, A. Kozáková,
Automatic control systems in car production	(3rd sem., 2-2h)	A. Kozáková, Š. Kozák
Biomechatronic systems	(3rd sem., 2-2h)	M. Kukučka
CAD and mechatronics systems design	(3rd sem., 2-2h)	P. Drahoš
Lighting systems for cars	(3rd sem., 2-2h)	J. Murín, R. Fric
Multimedia and Telematics for Mobile Platforms	(3rd sem., 2-2h)	M. Huba, P. Bisták
Nonconventional automotive and electromobile drives	(3rd sem., 3-2h)	V. Ferencey, M. Bugár
Design of Complex Mechatronic Systems	(4th sem., 2-2h)	V. Ferencey, Š. Kozák, J. Murín, J. Cigánek
PLC Systems in Mechatronics	(4th sem., 2-2h)	J. Šturcel, J. Osuský
Unconventional Power devices of Automobiles	(4th sem., 2-2h)	V. Ferencey

III.3 Undergraduate Study (Bc.) Distance Learning Method

Mechanics	(3rd sem.)	J. Murín, T. Sedlár
Instrumentation of Control Systems	(6th sem.)	J. Šturcel, P. Drahoš
Industrial Communication Systems	(8th sem.)	M. Žalman, I. Bélai
Nonlinear Systems	(8th sem.)	M. Huba, P. Bisták

IV. RESEARCH PROJECTS

IV.1 National Scientific Projects

- Advanced Control Methods based on FPGA Structures, APVV-0772-12. Duration: 2013-2017 (A. Kozáková)
- Advanced Methods and Simulations of SMART Mechatronic Systems, APVV-0246-12. Duration: 2013-2016 (J. Murín)
- Advanced methods for nonlinear modeling and control of mechatronic systems, VEGA 1/0937/14. Duration: 2014-2017 (M. Huba)
- Advanced methods of robust and optimal control, VEGA 1/1241/12. Duration: 2012-2015 (V. Veselý, deputy head: A. Kozáková)

- Broadband MEMS detector of terahertz radiaton, APVV-14-0613. Duration: 2015-2018 (principal investigator: T. Lalinský - Slovak Science Academy, principal investigator in FEI: V. Kutiš)
- Project ALLEGRO, ITMS 26220220198 (principal investigator in FEI: V. Slugeň, members: V. Kutiš, J. Murín, J. Paulech)
- Computer aided robust nonlinear control design, APVV-0343-12. Duration: 2013-2017 (M.Huba)
- Development of virtual laboratory for implementation of advanced methods of teaching in the new study program Electromobility, KEGA 035STU-4/2014. Duration: 2014-2016 (V. Ferencey)
- Electronic educational-experimental laboratories of Mechatronics, KEGA 011STU-4/2015. Duration: 2015-2017 (P. Drahoš)
- Modelling of thermohydraulic and stress conditions in selected components of nuclear power plants with pressurized water reactor, VEGA 1/0228/14. Duration: 2014-2016 (V. Kutiš)
- Multimedial education in mechatronics, KEGA 030STU-4/2015. Duration: 2015-2017 (D. Rosinová)
- Online laboratory for teaching automation control subjects, KEGA 032STU-4/2013. Duration: 2013-2015 (K. Žáková)
- Research of nonuniform torsion of cross-sections, VEGA 1/0453/15. Duration: 2015-2017 (J. Murín)
- New design approaches for VLSI implementations of neurochips and their use for signal processing in bioapplications and neuroimplants, VEGA 1/0987/12. Duration: 2012-2015 (D. Ďuračková, deputy head: M. Kukučka)
- Implementation of on-chip test methods for mixed-signal integrated circuits and systems in nanotechnologies, VEGA 1/0823/13. Duration: 2013-2016 (V.Stopjaková, member: M. Kukučka)
- Preparation and diagnostics of heterostructures for advanced photovoltaic applications VEGA 1/0377/13. Duration: 2013-2016 (L. Harmatha, member: P. Fuchs)
- Multimode piezoelectric resonators and sensors VEGA 1/0664/14. Duration: 2014-2017 (V. Štofanik, member: P. Fuchs)

IV.2 International Scientific Projects

- Support of international mobilites between STU Bratislava, NTNU Trondheim, and Universität Liechtenstein. Duration: 2015-2016 (M. Huba)

IV.3 Other National Scientific Projects

- Information control system of electronic diferencial for small car, 2013et010. Duration: 2014-2015 (M. Bugár)
- Extending the life of the battery system. Duration: 2015-2015 (M. Bugár)
- Software control directional vehicle dynamics UGV 6x6. Duration: 2015-2015 (M. Bugár)
- REST Platform for Online Control of Experiments, REST-PORE. Duration: 2015-2015 (M. Gula)
- Research on innovative methods of wastewater treatment. Duration: 2015-2015 (Š. Kozák)
- Research and development of high-performance Hi-Tech mechanical seals. Duration: 2015-2015 (Š. Kozák)
- Intelligent shading systems. Duration: 2015-2015 (Š. Kozák)

V. COOPERATION

V.1 Cooperation in Slovakia

- ABB, Ltd., Bratislava
- ADROC Tech Ltd., Trnava
- AOS, Liptovský Mikuláš
- Applied Meters Inc., Prešov
- Applied Precision, Bratislava
- B&R, Ltd., Nové Mesto n. V.

- BEZ, a.s., Bratislava
- BOST SK, a.s. Trenčín
- DATALAN Bratislava, Ltd.
- Department of acupuncture, Faculty of medicine, Slovak medical university, Bratislava
- E-Academia Slovaca, n.o., Bratislava
- Faculty of Architecture, Slovak University of Technology in Bratislava
- Faculty of Medicine, Comenius University, Bratislava
- Faculty of Mechanical Engineering, Slovak University of Technology in Bratislava
- Faculty of Mechanical Engineering, ŽU Žilina
- Honeywell Ltd., Bratislava
- HIS SENZOR Ltd., Prešov
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Institute of Construction and Architecture, Slovak
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Materials Machine & Mechanics, Slovak Academy of Sciences, Bratislava
- International Laser Centre, Bratislava
- Johnson Controls Ltd., Bratislava
- Krížik GBI JSC, Prešov
- ME – Inspection, Bratislava
- MIBA, a.s., Vráble
- MicroStep-MIS Ltd., Bratislava
- Ministry of Interior of the Slovak Republic
- MyEnergy, a.s., Bratislava
- Nuclear Power Plants Research Institute (VÚJE a.s.) Trnava
- Nuclear Power Plants (SE-EBO) Jaslovské Bohunice
- Nuclear Power Plants (SE-EMO) Mochovce
- OMS, Ltd., Senica
- Osram Slovakia, Ltd., Nové Zámky
- PPA Energo Ltd., Bratislava
- PRAGA Cars, Ltd., Orechová Potôň
- Regotrans Rittmeyer, Ltd., Bratislava
- SAP Slovakia, Ltd.
- SEZ Dolný Kubín, a.s.
- Schneider Electric Slovakia, Ltd., Bratislava
- Siemens Ltd., Bratislava
- Slovak Electricity Transmission System (SEPS a.s.) Bratislava
- Slovak National Accreditation Service, Bratislava
- Slovak Power Company (SE - Enel a.s.) Bratislava
- Technical University of Košice
- UMB Banská Bystrica
- University of Žilina
- Volkswagen Slovakia Inc., Bratislava
- Vonsch Brezno, Ltd.
- VUJE Inc., Trnava

V.2 International Cooperation

- Budapest University of Technology and Economics, Budapest, Hungary
- Czech Technical University of Prague, Czech Republic
- Electronics Research Institute, National Research Center, Giza, Egypt
- European Organization for Nuclear Research (CERN), Beams Department, RF Group, Feedback and Beam Control Section
- Faculdade de Engenharia da Universidade do Porto, Portugal

- Faculty of Automatics, Technical University Sofia, Bulgaria
- Fern Universität - Hagen, Germany
- Humusoft Ltd., Praha, Czech Republic
- Hungarian Fuzzy Association, Hungary
- Institute de Recherche en Communications et Cybernetique, C.N.R.S, Nantes, France
- Institute for Problems of Mechanical Engineering, St.Petersburg, Russia
- Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic, Prague, Czech Republic
- Jožef Stefan Institute, Ljubljana Slovenia
- MicroEpsilon, Bechyne, Czech Republic
- Norwegian University of Science and Technology, Trondheim, Norway
- Profibus International, Germany
- Schneider Electric, Germany
- Strasbourg University, BETA, Strasbourg, France
- Technical University Chemniz, Germany
- Technical University Marche of Ancona, Italy
- Technical University of Brno, Czech Republic
- Technical University of Graz, Austria
- Technical University of Liberec, Czech Republic
- Technical University of Ostrava - VŠB, Czech Republic
- Technical University of Pardubice, Czech Republic
- Technical University of Tomas Bata in Zlín, Czech Republic
- Technical University Riga
- Texas Instruments Deutschland GmbH, Freising, Germany
- Texas Instruments, Inc, USA
- University College of Swansea, United Kingdom
- University of Maribor, Slovenia
- University of Zagreb, Croatia
- University of Applied Sciences Wiener Neustadt, Austria
- Vienna University of Technology, Austria
- Visteon, Nový Jičín, Czech Republic
- Word University Programme ARM Microcontrollers, Cambridge, UK

V.3 Collaboration with industry and other institutions

- EVPU Nová Dubnica, research in mechatronics, navigation, visualization and vehicle camera systems
- Institute of Informatics SAV, Crisis Project – cooperation in development of six wheels vehicle with electrodrives
- Technological Institute in Bratislava – HW and SW modules development for intelligent building
- Council for Broadcasting and Retransmission
- Freescale, Inc., USA
- Texas Instruments – European University Program
- BOST SK, a.s. Trenčín

VI. THESES

VI.1 Masters Theses

Alumni Applied Mechatronics, June 2015

- Bača V.: Design of the image scanning system based on low power processor MSP430 (P. Fuchs)
- Benedek J.: Design and implementation of electronic differential (M. Bugár)
- Bohuš J.: Optoelectronic system for small UGV (M. Bugár)
- Gahér M.: Model of technological process with distributed control (I. Bélai)

- Galovič M.: PEM fuel cell power control (V. Ferencey)
- Gašparová I.: Computerized of workspace for measurement of transmission properties of optical connections (J Kováč)
- Jakubička I.: BLDC motor control with a use of a 32 bit DSP microprocessor (P. Fuchs)
- Katona G.: Elektronic control algorithm of mixture preparation in spark ignition engine (V. Ferencey)
- Lechvár J.: Electromagnetic compatibility of propulsion system of electric vehicle (V. Ferencey)
- Lukáč P.: Management of electric energy system (M. Bugár)
- Martinkovič.: Electronic steering system for small UGV (M. Bugár)
- Nehánszki R.: Thermo-mechanical braking simulation of vehicle (J. Paulech)
- Slaminka S.: Recuperation Control During Electric Car Operation (M. Bugár)
- Šandal T.: Sensory system design for small unmanned ground vehicle (M. Bugár)
- Valah D.: Diagnostic of vibration – modal analysis (V. Goga)
- Vargic R.: The battery management system in electric energy system (M. Bugár)
- Vincze T.: Modeling and simulation of SMA microgripper (V. Kutiš)
- Vyletel R.: Tester of control module C28I at the processor base TMS320F2812 (P. Fuchs)

Alumni Applied Informatics, June 2015

- Gedaj M.: The influence on stress and music on drivers behavior (M. Kukučka)
- Kolimár O.: Multiple criteria and multiple variant decision making in social networks environment (Š. Kozák)
- Maras F.: Laboratory experiment control via internet enviroment (K. Žáková)
- Markusek M.: Using of internet publication resources for generation of citation index (K. Žáková)
- Nižnanská M.: The application for editing and software support of hybrid Petri nets (D. Rosinová)
- Ondrejkovič M.: Module for virtual and remote laboratories in the Moodle system (P. Bisták)
- Paučo M.: Modeling of automated storage systems using Petri nets (A. Kozáková)
- Prichocká M.: Application of neural networks for evaluation quality of weld (A. Kozáková)
- Samardžiová Z.: Software and hardware implementation of algorithms and fuzzy control based on embedded microprocessors (Š. Kozák)
- Štefka P.: Mobile application for remote experiments control (K. Žáková)
- Ustaník M.: Remote control of laboratory experiment (K. Žáková)

Alumni Cybernetics, June 2015

- Beňo T.: Design of boiler control (A. Kozáková)
- Dziak L.: Process control with PLC Simatic (P. Drahoš)
- Varga Š.: Virtual laboratory of control dynamic systems (P. Bisták)

Alumni Power, Electrical Engineering, June 2015

- Babjak J.: CFD modelling of coolant flow in fuel assembly head of nuclear reactor VVER 440 (V. Kutiš)
- Lukáč M.: Elastodynamic analysis of electric cable with clutch (J. Murín)
- Róža Š.: PEM fuel cell power control (J. Paulech)
- Štefanovič, M.: Computer analysis of polygonal pole for overhead power lines (J. Paulech)

Alumni Robotics, June 2015

- Écsy D.: Electromechanical jack for automobiles (V. Goga)
- Kusý R.: Intelligent temperature control in the building (P. Drahoš)
- Jablonický J.: Control of hydraulic system (P. Ťapák)
- Rubint S.: Automated measuring workplace with tensometers (J. Šturcel)
- Suchý D.: Robust controller design for 3D laboratory model of crane crab (M. Hypiusová)
- Uhrín M.: Tracking antenna for unmanned aerial vehicles (R. Balogh)

Alumni Applied Mathematics (in Faculty of Civil Engineering), June 2015

- Lukáč M.: The influence of selection of turbulent model on results achieved in CFD analysis of model of the fuel assembly of the VVER-440 reactor (V. Kutiš)
- Tücsök N.: Modeling and simulation of solid thermomechanical microactuator (J. Murín)

VI.2 PhD. Theses

- Janík, Z.: Unified system for online real-time control support (K. Žáková)
- Noge, F.: Contribution to the imlementation of predictive control methods using FPGA structures (Š. Kozák)
- Staňák, V.: Anylysis of Energy Recovery Process during Braking of an Electric Vehicle (in Faculty of
- Mechanical Engineering) (V. Ferencey)

VI.3 Habilitation Theses

- Goga, V.: Computer modelling in mechatronics

VII. OTHER ACTIVITIES

Conferences organized by the Institute members:

- 17th Conference of Doctoral Students ELITECH`15 (A. Kozáková)
- 8th IFAC Symposium on Robust Control Design ROCOND 2015, 8-11 July 2015, Bratislava, Slovakia. (Š. Kozák, J. Cigánek, M. Huba, A. Kozáková, J. Osuský, D. Rosinová, K. Žáková)

Other events:

Conferences Participation, Membership in Committees:

- AT&P Journal (J. Šturcel – Editorial Board member)
- Journal of Cybernetics and Informatics (Š. Kozák – Editor in Chief, D. Rosinová - Managing Editor)
- Journal of Electrical Systems and Information Technology (Š. Kozák – Editor in Chief, D. Rosinová, A. Kozáková – members of Editorial Board)
- Slovak Society for Cybernetics and Informatics at SAS: Š. Kozák – chair of Main Committee, M. Huba – vice-chair, A. Kozáková – secretary)
- 7th International Conference on Mobile, Hybrid and On-line Learning (eLmL 2015), February 22-27, 2015, Lisbon, Portugal (K. Žáková – PC member)
- 12th International Conference on Remote Engineering and Virtual Instrumentation (REV 2015), February 25-28, 2015, Bangkok, Thailand (K. Žáková – PC member)
- Mediterranean Conference on Information & Communication Technologies'2015 (MedICT'2015), May 7-9, 2015, Saïdia, Morocco (K. Žáková – PC member)
- 13th Internationsl IFAC Conference on Programmable Devices and Embedded Systems (PdeS 2015), May 13-15, 2015, Cracow, Poland (M. Huba, K. Žáková – PC members)
- 6th Internationak Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2015), 18-20 May 2015,Venice (V. Kutiš, P.Drahoš, J. Murín, J. Paulech, J. Hrabovský - participants)
- 28th International FLAIRS Conference (FLAIRS-28), May 18-20, 2015, Hollywood, Florida, USA, (R. Balogh – PC member)
- 6th International Conference on Robotics in Education (RiE 2015), May 20-22, 2015, Yverdon-les-Bains, Switzerland (R. Balogh – PC chair)
- 7th International Conference on Computer Supported Education (CSEDU 2015), May 23-25, 2015, Lisbon, Portugal (K. Žáková – PC member)
- 5th Int. Conference on Computational Methods in Strutural Dynamics and Eerthquake Engineering (COMPDYN2015), 24-27 May 2015, Creta (J. Murín - participant)
- 16th International Carpathian Control Conference (ICCC 2015), 27-30 May 2015, Szilvásvárad, Hungary (Š. Kozák – IPC member, P. Balko, O. Haffner, E. Kučera - participants)

- 3rd Experiment@ International Conference (exp.at '15), 2-4 June 2015, Ponta Delgada, Portugal (M. Huba, K. Žáková – PC members)
- 20th International Conference on Process Control (PC'15), June 9-12, 2015, Štrbské Pleso, Slovak republic (M. Huba, Š. Kozák – PC members)
- 2nd International Conference on Multi-scale Computational Methods for Solids and Fluids (MSF2015), 10-12 June 2015, Sarajevo (J. Murín - member of Scientific Committee, participant)
- 23rd Mediterranean Conference on Control and Automation (MED 2015), June 16-19, 2015, Torremolinos, Spain (M. Huba – IPC member)
- 8th IFAC Symposium on Robust Control Design ROCOND 2015, 8-11 July 2015, Bratislava, Slovakia. (Š. Kozák, M. Huba, A. Kozáková, D. Rosinová – PC members)
- TSP 2015: 38th International Conference on Telecommunications and Signal Processing, July 9th-11th, 2015, Prague, Czech Republic (M. Kukučka – PC member)
- 5th International Conference on Civil, Structural ane Enviremental Engineering Computing (CC2015), 1-4 September 2015, Prague, (J. Murín - member of Scientific Committee, participant)
- 8th International Congress of Croation Society of Mechanics (8iccsm), 29 Sept.-2. October 2015, Opatia (J. Murín - member of Scientific Committee, participant)
- 16th IFAC Workshop on Control Applications of Optimization (CAO'2015), October 6-9, 2015, Garmisch-Partenkirchen, germany (A. Kozáková – PC member)
- Communication and Information Technologies, 8th International Scientific Conference (KIT 2015), October 14th - 16th, 2015 - Tatranské Zruby (P. Fuchs – member of scientific committee)
- 3rd IFAC workshop on internet based control education (IBCE 2015), November 4-6, 2015, Brescia, Italy (M. Huba, K. Žáková – PC members)
- 13th International Conference on Emerging eLearning Technologies and Applications (ICETA 2015), November 26-27, 2015, Starý Smokovec, High Tatras, Slovakia (M. Huba, K. Žáková – PC members)

Awards:
- Best paper award: M. Gula-K. Žáková, jLab – Java Based Online Laboratory, 3rd Experiment@International Conference – exp.at'15, June 2015, Ponta Delgada, Portugal
- Award for science technology transfer: P. Ťapák, World Association for Innovative Technologies, Dubrovnik, Croatia, September 2015

VIII. MEMBERSHIP IN INSTITUTIONS/COMMITTEES

VIII.1 Membership in National Institutions/Committees

- STU Bratislava, Faculty of Informatics and Information Technology (Š. Kozák, member of Scientific Board)
- Paneuropean University Bratislava, Faculty of Informatics (M. Huba, member of Scientific Board)
- Institute of Informatics Slovak Academy of Sciences (Š. Kozák, member of Scientific Board)
- Slovak Society for Cybernetics and Informatics-SSKI (Š. Kozák, chairman, M.Huba - vicechair)
- International Association of Online Engineering (K. Žáková, executive committee member)
- Co-chairman in Slovak Society for Mechanics (J. Murín)
- Slovak Society for Mechanics (V. Kutiš)
- Fuel Cells and hydrogen Joint Undertaking (FCH JU) (V. Ferencey – member of States Representatives Group)
- Membership in the Editorial Board of Journal: Mechanical Engineering (J. Murín)
- Member of Scientific Council of the FEI STU (J. Murín)
- European University Program TEXAS INSTRUMENTS (P. Fuchs - member, lecturer)
- SBIMI SLS, Society for Biomedical Engineering and Medical Informatics, Scientific Secretary of SBIMI SLS (M. Kukučka - scientific secretary & member)
- International Scientific Committee New Trends in Signal Processing (P. Fuchs - member)
- Slovak National Accreditation Service (P. Podhoranský, J. Šturcel – expert reviewers)
- Member of Study for PhD Study Programme 5.1.7 Applied Mechanics (J. Murín)

- Member of Study for PhD Study Programme 5.2.14 Automation and control (M.Huba, Š. Kozák, A. Kozáková)
- Member of Study for PhD Study Programme 5.2.16 Mechatronics (Š. Kozák, M. Huba)
- Member of Study for PhD Study Programme 9.2.7 Cybernetics (Š. Kozák, D. Rosinová)
- Member of Study for PhD Study Programme, Military Communication and Information Systems (P. Fuchs)

VIII.2 Membership in International Institutions/Committees

- IEEE The Institute of Electrical and Electronics Engineers, Inc. (M. Huba)
- IEE The Institute of Electrical Engineers, Inc. (Š. Kozák, M. Huba)
- IFAC Technical Committee: TC 2.3 Nonlinear Control Systems (M. Huba - member)
- IFAC Technical Committee: TC 2.4 Optimal Control (A. Kozáková - member)
- IFAC Technical Committee: TC 2.5 Robust Control (M. Huba - member)
- IFAC Technical Committee: TC 3.1 Computers for Control (Š. Kozák - member)
- IFAC Technical Committee: TC 3.2 Computational Intelligence in Control (Š. Kozák - member)
- IFAC Technical Committee TC 5.4 Large Scale Complex Systems (A. Kozáková - member)
- IFAC Technical Committee TC 5.4 Large Scale Complex Systems (D. Rosinová - member)
- IFAC Technical Committee TC 9.4 Control Education (M. Huba, K. Žáková – members)
- IFAC TC Education Liaisons (A. Kozáková - member)
- IFAC Technical Commitee on Control Education (M. Huba - member)
- European Coordination Committeee for Artificial Intelligence-ECCAI (Š. Kozák - member)
- European Association of Distance Teaching Universities – EADTU (M. Huba - board member)
- Profibus International (P. Drahoš)
- Profibus International (I. Bélai - member)
- Chair of Slovak branch of Central European Association for Computational Mechanics (CEACM) (J. Murín)
- European Community on Computational Methods in Applied Sciences (ECCOMAS) (J. Murín)
- International Association for Computational Mechanics (IACM) (J. Murín)
- Central European Association for Computational Mechanics (CEACM) (V. Kutiš)
- Institute for Mechanics of Materials and Structures, TU Vienna, Austria (J. Murín)
- The States Representatives Group on the Fuel Cells and Hydrogen Joint Undertaking programs in Europe (FCH JU) (V. Ferencey)
- Membership in the Editorial Board of Journal: Recent Patents on Engineering (J. Murín)
- IFMBE, The International Federation for Medical and Biological Engineering (M. Kukučka - member)
- Scientific Committee Communication and Information Technologies (P. Fuchs - member)

IX. PUBLICATIONS

Books

1. FERENCEY, Viktor - MADARÁS, Juraj. Modeling and simulations of electric propulsion systems dynamics. 1. ed. Bratislava : STU Publishing house, 2015. 158 p. ISBN 978-80-227-4486-7. (in Slovak)
2. VESELÝ, Vojtech - ROSINOVÁ, Danica - KOZÁKOVÁ, Alena. Robust Controller Design. 1. ed. Bratislava : Felia., 2015. 294 p. ISBN 978-80-971512-6-3. (in English)

Parts of Books

1. BISTÁK, Pavol. Time sub-optimal control of triple integrator applied to real three-tank hydraulic system. In Lecture Notes in Computer Science : Computer aided systems theory – EUROCAST 2015. Vol. 9520, (2015), p. 25-32. ISSN 0302-9743. (in English)
2. HUBA, Mikuláš - HUBA, Tomáš. Constrained pole assignment control for a 2nd order oscillatory system. In Lecture Notes in Computer Science : Computer aided systems theory – EUROCAST 2015. Vol. 9520, (2015), p. 64-71. ISSN 0302-9743. (in English)
3. HUBA, Mikuláš - ŽÁKOVÁ, Katarína - SOÓS, Dávid. Online presentation of the performance portrait method. In Online Experimentation: Emerging Technologies and IoT. Barcelona : IFSA, 2015, p. 229-245. ISBN 978-84-608-6128-7. (in English)
4. HUBA, Tomáš - HUBA, Mikuláš. Autonomous paracopter control design. In Lecture Notes in Computer Science : Computer aided systems theory – EUROCAST 2015. Vol. 9520, (2015), p. 95-102. ISSN 0302-9743. (in English)
5. ŤAPÁK, Peter - HUBA, Mikuláš. Identification of first order plants by relay feedback with non-symmetrical oscillations. In Lecture Notes in Computer Science : Computer aided systems theory – EUROCAST 2015. Vol. 9520, (2015), p. 49-56. ISSN 0302-9743. (in English)

Journals

1. BUCZ, Štefan - KOZÁKOVÁ, Alena. The sine wave tuning method: Robust PID controller design in the frequency domain. In *Journal of Electrical Systems and Information Technology*. Vol. 2, Iss. 3 (2015), p. 358-367. ISSN 2314-7172. (in English)
2. CIGÁNEK, Ján. Trajectory tracking in 2D under fuzzy controller with variable sampling. In *Journal of Electrical Systems and Information Technology*. Vol. 2, Iss. 3 (2015), p. 338-346. ISSN 2314-7172. (in English)
3. CIGÁNEK, Ján - KOCÚR, Michal - KOZÁK, Štefan. FPGA as a tool for hardware realization of feedback control. In *Journal of Electrical Systems and Information Technology*. Vol. 2, Iss. 3 (2015), p. 328-337. ISSN 2314-7172. (in English)
4. DZUBA, Jaroslav - VANKO, Gabriel - DRŽÍK, Milan - RÝGER, Ivan - VALLO, Martin - KUTIŠ, Vladimír - HAŠKO, Daniel - CHOLEVA, P. - LALINSKÝ, Tibor. Stress investigation of the AlGaN/GaN micromachined circular diaphragms of a pressure sensor. In *Journal of micromechanics and microengineering*. Vol. 25, No. 1 (2015), Art. no. 015001 [7] p. ISSN 0960-1317. (in English)
5. DZUBA, Jaroslav - VANKO, Gabriel - DRŽÍK, Milan - RÝGER, Ivan - KUTIŠ, Vladimír - ZEHETNER, Johann - LALINSKÝ, Tibor. AlGaN/GaN diaphragm-based pressure sensor with direct high performance piezoelectric transduction mechanism. In *Applied Physics Letters*. Vol. 107, No. 12 (2015), art. no. 122102, [4] p. ISSN 0003-6951. (in English)
6. GOGA, Vladimír - PAULECH, Juraj - SEDLÁR, Tibor - MATEJ, Juraj. Absorption properties of the solid foams - calculation and experimental testing. In *Bulletin of Applied Mechanics*. Vol. 11(39), (2015), p. 36-40. ISSN 1801-1217. (in English)
7. GOGA, Vladimír - HUČKO, Branislav. Phenomenological material model of foam solids. In *Journal of Mechanical engineering = Strojnícky časopis*. Vol. 65, No. 1 (2015), p. 5-20. ISSN 0039-2472. (in English)
8. HRABOVSKÝ, Juraj - PAULECH, Juraj - MURÍN, Justín - KUTIŠ, Vladimír. Electro-thermo-mechanical analysis of FGM actuator. In *Bulletin of Applied Mechanics*. Vol. 11(39), (2015), p. 25-29. ISSN 1801-1217. (in English)

9. KOZÁKOVÁ, Alena - HYPIUSOVÁ, Mária. LQG/LTR based reference tracking for a modular servo. In *Journal of Electrical Systems and Information Technology*. Vol. 2, Iss. 3 (2015), p. 347-357. ISSN 2314-7172. (in English)

10. KRASŇANSKÝ, Róbert - DVORŠČÁK, Branislav. Hardware implementation of model-based control algorithm using FPGA technology. In *International Review of Automatic Control*. Vol. 8, No. 1 (2015), p. 23-31. ISSN 1974-6059. (in English)

11. KRASŇANSKÝ, Róbert - VALACH, Peter - SOÓS, Dávid - ZARBAKHSH, Javad. Reference trajectory tracking for a multi-DOF robot arm. In *Archives of Control Sciences*. Vol. 25, No. 4 (2015), p. 513-527. ISSN 1230-2384. (in English)

12. KRASŇANSKÝ, Róbert - KOZÁKOVÁ, Alena. Decentralized generalized predictive control based on the equivalent subsystems method. In *Cybernetics and Physics*. Vol. 4, No. 4 (2015), p. 95-104. ISSN 2223-7038 (Print). (in English)

13. KUKUČKA, Marek - KOZÁK, Štefan - DRAHOŠ, Peter - WEISZE, Andreas. Pneumatic model of measuring probe in voltage acupuncture skin mapping with influence of frequency of driving signal. In *International Review of Automatic Control : Theory and Applications*. Vol. 8, No. 4 (2015), p. 307-314. ISSN 1974-6059. (in English)

14. KUKUČKA, Marek - KOZÁK, Štefan - WEISZE, Andreas - ĎURAČKOVÁ, Daniela - STOPJAKOVÁ, Viera - KRAJČUŠKOVÁ, Zuzana - TEPLAN, Michal. Mechanical vs. Pneumatic Model of Measuring Probe in Voltage Acupuncture Skin Mapping. In *International Review of Automatic Control*. Vol. 8, No. 6 (2015), p. 434-441. ISSN 1974-6059.

15. MURÍN, Justín - AMINBAGHAI, Mehdi - HRABOVSKÝ, Juraj. Elastostatic analysis of the spatial FGM structures. In *Journal of Mechanical engineering = Strojnícky časopis*. Vol. 65, No. 1 (2015), p. 27-55. ISSN 0039-2472. (in English)

16. OSUSKÝ, Jakub - NOGE, Filip - KOCÚR, Michal. Multivariable generalized predictive control design: Application for couple of DC motors. In *International Review of Automatic Control*. Vol. 8, No. 3 (2015), p. 197-202. ISSN 1974-6059. (in English)

17. OSUSKÝ, Jakub - KRALEV, Jordan - SLAVOV, Tsonyo. Robust position control for two wheels mobile robotic system. In *International Review of Automatic Control : Theory and Applications*. Vol. 8, No. 4 (2015), p. 267-271. ISSN 1974-6059. (in English)

18. PAULECH, Juraj - GOGA, Vladimír - VÁRY, Michal - LELÁK, Jaroslav - JANÍČEK, František - MURÍN, Justín. Electric resistance of polygonal pole for overhead power lines. In *Electrotehnica, Electronica, Automatica*. Vol. 63, No. 1 (2015), p. 7-15. ISSN 1582-5175. (in English)

19. PAULECH, Juraj - JAKUBEC, Jakub - GOGA, Vladimír - HRABOVSKÝ, Juraj - KUTIŠ, Vladimír - SEDLÁR, Tibor. Cooling of bundled overhead power lines. In *Bulletin of Applied Mechanics*. Vol. 11(38), (2015), p. 1-3. ISSN 1801-1217. (in English)

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Patents and Standards

1. HAFFNER, Oto - KUČERA, Erik. *Techniqe for making a surface with wood imitation*. *Utility model no. 7045*. Mediation date: 16.1.2015. 2 p. (in Slovak)
2. MADARÁS, Juraj - BUGÁR, Martin - FERENCEY, Viktor. *Integrated electric drive of wheel in the swingarm chassis of unmanned ground vehicle (UGV)*. *Utility model no. 7231*. Mediation date: 14.7.2015. 9 p. (in Slovak)

INSTITUTE OF COMMUNICATION AND APPLIED LINGUISTICS

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Departments of the Institute:

Department of English and Communication
Department chair: PhDr. Ivan Podpera
Department of Germanic, Slavic, Romance Languages and Communication
Department chair: PhDr. Jarmila Belasová

General Information

The history of teaching foreign languages at FEI started on 1 April 1990 when the Department of Languages was established. This decision was made to link language education more closely with Faculty students' specific needs, while before this date foreign language teaching was provided by the all-university Department of Languages. On 1 December 2012 the Department was renamed to the Institute of Communication and Applied Linguistics.

The Institute has specified the aims of foreign language teaching on the basis of extensive needs analysis carried out amongst Faculty graduates. The aims include:

- oral communication in the form of monologue or dialogue in typical situations (discussion, presentation, telephoning).
- listening for general or specific information.
- reading specialist literature.
- written communication on the corresponding level in typical genres (report, instructions, c.v., official correspondence).
- development of communicative competence not only on bilingual, but also on monolingual level.

Institute teachers have long experience in different areas of education:

- teaching in courses of further education of university teachers of foreign languages for specific purposes in Slovakia and abroad in cooperation with the British Council, education of teacher trainers of English for specific purposes in the EU in cooperation with the British Council and the Ministry of Defence of the Slovak Republic.
- e-learning education (methodology of e-learning courses design and their teaching).
- design of interactive learning materials in Moodle for the needs of bachelor and PhD. students.

- authorship of learning materials for bachelor and PhD students, as well as for general public (e.g. English for Students of Electrical Engineering, Angličtina nielen pre samoukov, Angličtina pre kurzy a jazykové školy 1,2,3, English in Need).
- expertise in the area of languages for specific purposes.
- working in the committee of UNIcert LUCE (Language Accreditation Unit for Universities of Central and Eastern Europe), accreditation of language programmes of Slovak and European universities in the accreditation system UNIcert LUCE, membership in examination boards at individual universities.

No professional can make a successful career without having mastered at least one foreign language. Its knowledge is now considered a matter-of-course in most industrial and commercial companies. Due to regional and economic specifics of Slovakia, specialists must be able to communicate in at least one foreign language, preferably more. Their professional life requires competent written and oral communication for general and specific purposes.

It does not suffice to know only the grammar and vocabulary of the given language, but it is also necessary to understand the meaning of lingual and extralingual means of other cultures and subcultures. For this reason, it is important (in accordance with EU policy) to improve the education of students also in the area of intercultural communication.

I. STAFF

Senior Lecturers:	Jarmila Belasová, Jana Matiašovská, Daniela Ondroušková, Ivan Podpera, Ľubica Rovanová, Ľudmila Solenská,
Technical Staff:	Mária Čederlová (secretary)

II. EQUIPMENT

None

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

English   (1st, 2nd sem., 0-2h)   J. Matiašovská, D. Ondroušková,
                                                                                          I. Podpera, Ľ. Rovanová
Optional courses for beginners in English
                                                       (1st sem., 0-2h)   J. Matiašovská, D. Ondroušková

Other optional courses: (2nd - 10th sem., 0-2h):
German (beginners, intermediate and advanced)   J. Belasová, Ľ. Solenská
Russian (beginners, intermediate and advanced)   J. Belasová
Management of Communication (2nd sem., 1-2h)   Ľ. Rovanová, J. Belasová

III.2 Graduate Study (Ing.)

Specific optional courses:

German (beginners, intermediate)	(7th - 11th sem., 0-2h)	J. Belasová
German (advanced)	(7th - 11th sem., 0-2h)	Ľ. Solenská
Russian (all levels)	(7th - 11th sem., 0-2h)	J. Belasová

III.3 Undergraduate and Graduate Study (Ing.) for Foreign Students in English

III.4 Distance Study

III.5 Doctoral Study (PhD.)

English	(0-2h)	I. Podpera, Ľ. Rovanová
German	(0-2h)	J. Belasová, Ľ. Solenská
Russian	(0-2h)	J. Belasová

IV. RESEARCH PROJECTS

- Computer Aided Robust Nonlinear Control Design, APVV-0343-12 (Ľ. Rovanová)

V. COOPERATION

V.1 Cooperation in Slovakia

- Goethe Institut, Bratislava
- Österreichisches Kulturinstitut Bratislava
- Verband der Deutschlehrer und Germanisten der Slowakei
- CercleS (European Confederation of Language Centres in Higher Education), Bratislava
-

V.2 International Cooperation

- Goethe Institut, Krakow, Poland
- Goethe Institut, Nancy, France
-

V.3 Membership in International Organizations and Societies

- Salzburg Seminar Alumna (USA) (Ľ.Rovanová)
- CASAJC, (The Czech and Slovak Association of Language Centres in Higher Education), member of CERCLES
- UNIcert LUCE (Language Accreditation Unit for Universities in Central Europe)

VI. THESES

VII. OTHER ACTIVITIES

- Working on the new study material ´English for Students of Electrical Engineering´ (I. Podpera)
- English for Students of Electrical Engineering´ - an intermediate level electronic course in Moodle (I. Podpera)
- English for Students of D level´- an upper-intermediate level electronic course in Moodle (I. Podpera)
- Expert for lifelong learning programs assessment (Ľ. Rovanová)
- Assessor of KEGA projects – Ministry of Education (Ľ. Rovanová)
- Member of UNIcert LUCE committee: Working-out of expert opinions for the accreditation of German Language Courses at Slovak and Czech universities (Ľ. Solenská)
- The expert supervision of final examinations of UNIcert at accredited Slovak and Czech universities (Ľ. Solenská)
- Working-out of materials for the first UNIcert examinations at the department, testing, marking, diploma design and evaluation (Ľ. Solenská)
- Testing and confirming of students´ language competence for the purpose of exchange study stays and traineeships according to European language standards (Ľ. Solenská)

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GENERAL INFORMATION:

On May 1, 2011 was established the Institute of Computer Science and Mathematics as a union of two former Departments at FEI STU, namely Department of Informatics and Information Technology and Department of Mathematics. In fact we can count our history from the creation of the Department of Applied Informatics and Information Technology at FEI STU on Feb 1, 2004. During this short period have finished 858 Bachelors, 464 Masters (Engineers) and 15 PhD. students. The study program Applied Informatics possesses deep theoretical and methodological knowledge and practical skills from the essential areas of the core of Informatics. Further knowledge from measurement, data capture, processing and transmission of information and diagnostic of systems is included to the program. A graduate will also have knowledge about information and communication networks, will understand methods of modeling and simulation of systems and processes. To achieve this target, courses from the core fields of Information Systems and Software Engineering interlace with courses divided into four majors: Security of Information Technologies, Biometrics, Modeling and Simulation of Event Systems, and IT in Control and Decision Making. During the study principles of individual and team scientific work and research, formulation of problems, their solution and presentation are emphasized, respectively. A broad professional career in the different branches of science, research, industry and services is open for graduates, like auditing large information and communication systems, design security systems to protect sensitive data, modeling of work-flow processes, and embedded systems, and design and use information systems and software products in the area of control engineering in various practical application domains. The Institute consists of 3 Departments, namely Department of IT Security, Department of Software Engineering and Department of Mathematics.

Departments of Institute of Computer Science and Mathematics

Department of IT Security

Department chair: doc. Ing. Pavol Zajac, PhD.   Tel: +421-2-602 91 723

e-mail: pavol.zajac@stuba.sk   Fax: +421-2-654 20 415

Short history

The cryptology education at EF SVŠT began in 1984 with a course "*Secret communication in computer networks*" for postgraduate study (PhD) as the first in former Czechoslovakia. In 1986 O. Grošek (EF SVŠT) and K. Nemoga (MÚ SAV) established a new research seminar CRYPTO, and except a short break 1989-1993, it is still a main center of cryptology research at FEI STU. In 1995 started a course *Ciphering* for students, along with the first Bachelor's projects and Diploma Theses in this area. Since the same year we had graduate students in the field of 25-11-9 Applied Informatics, and also (since 1997) 11-14-9 Applied Mathematics with the major Cryptology. The first Masters degree programme in the field of Security of Information Technologies was established in 2000/01 by the Department of Mathematics in cooperation with the former Department of Applied Informatics and Information Technology. After the creation of FIIT STU in 2003, the cryptology group of prof. Grošek created a core of the Department of Applied Informatics and Information Technology at FEI STU on Feb 1, 2004. On May 1, 2011 the Institute of Computer Science and Mathematics was established as a union of two former Departments at FEI STU. Since that time Crypto-group has formed the core of the Department of IT Security.

Directions, Future Trends, and Priorities

- Secure McEliece cryptosystem implementation for project NATO SPS 984520

- Continuation of the research in post-quantum cryptography

- International cooperation (University of Bergen, Masaryk University)

- Review of the new courses from the newly accredited study plan according to student feedback

Department of Software Engineering

Department chair: prof. RNDr. Gabriel Juhás, PhD.   Tel:+421 -2-602 91 266

e-mail: gabriel.juhas@stuba.sk   Fax:+421-2-602 91 415

Short history

History of the Department of Software Engineering began in February 2004 along with the development of the Department of Applied Informatics and Information Technology to teach students in the field of Advanced Web Technology. In September 2005 there was established a group of associated professor G. Juhás working in modeling, analysis, synthesis and verification of a wide range of event systems in various application areas. Other fields of research are architecture and software development, biometrics, eHealt and telemedicine. In 2009, the first Masters degree student in the field of Modeling and Synthesis of Event Systems has finished. In 2011, the group became a part of the Institute of Computer Science and Mathematics, and was named Department of Software Engineering.

Machine Learning Group is active at the Department of Software Engineering, Institute of Computer Science and Mathematics. It consists of university teachers and PhD students at the Department, who together with the undergraduate students works mainly in the following areas:

- machine learning for biometrics

  - face recognition

  - iris recognition

- machine learning for communication networks

  - classification of traffic in communication networks

  - prediction of video traffic in communication networks

Machine Learning Group cooperates closely with the partners performing research in the above mentioned areas in Slovakia, as well as abroad, e.g. Politècnico di Torino (http://www.polito.it/), Vrije Universiteit Brussel (http://www.vub.ac.be/). Through Group's involvement in HBBNext 7th Frame Programme project (http://www.hbb-next.eu) it closely cooperates with both the academia and private companies throughout the Europe.

All the relevant information about Machine Learning Group (people, software systems, scientific projects, publications) can be found on its homepage http://www.uim.elf.stuba.sk/kaivt/MLgroup.

Directions, Future Trends, and Priorities

Telemedicine represents innovative shift in delivering medical services with application of information and communication technologies outside the health institutions. Applications of telemedicine services include mobile and wearable technologies to support tele-health for management of chronic conditions and support general well being from infants to elderly. Other domains of tele-health systems research (including nonclinical domains) are in the scope of ongoing efforts to create the ground for identification and discussion of technological, social, cultural, economic and other drivers to gain wide acceptability of telemedicine services and systems.

National Centre of Telemedicine Services (NCTS) was opened on 1.12.2011 at Slovak University of Technology in Bratislava, Faculty of Electrical Engineering and Information Technology (FEI STU). Strategic partner of the NCTS is IBM Slovakia with important support to the Centre from Slovak Medical Chamber and WHO office in Slovakia.

Research and development in the Centre is aimed on the "complete loop system" including remote data collection (biomedical telemetry devices), data transmission and analytics to support experts review and feedback to medical personnel and the patients. International state-of-the-art in related research domains is delivered through the close collaboration with distinguished experts in the field of biomedical engineering and health informatics – prof. Cerutti, prof. Allen, prof. Zhang (CUHK, China), prof. Akay (UH, USA) and other researchers grouped under NCTS's Scientific Advisory Board.

Tele-monitoring services are developed by the NCTS with close cooperation with its medical partners include acquisition of vital signs related to, e.g. blood pressure, body temperature, glycemia, ECG. The complex picture of patient status is completed with GPS data and VOIP tele-consultations. Management of patient conditions is supported by clinicians' applications related to management of acquired data and alarm generation supporting the prompt feedback to the patient and provision of professional help. The specific characterization

of application is based on the requirements of medical personnel, related clinical process and target group (for example diabetes management, elderly citizens).

Department of Mathematics

Department chair: doc. RNDr. Ľubomír Marko, PhD.   Tel: +421-2-654 27 351

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Short history

The Origin of the Department of Mathematics is the same as the origin of the Slovak Technical School of M.R. Štefánik (1938) and the first rector was mathematician Jur Hronec too. In 1951 the Institutes of mathematics were united into the unique Department of mathematics of Slovak University of Technology (SVŠT), which was associated to Faculty of Electrical Engineering of SVŠT (EF SVŠT). The first head of the Department of Mathematics became academician Š. Schwarz. In 1984 the residence of EF SVŠT moved to Mlynská dolina (Bratislava). We remember famous researchers to be employed at the Department, namely professors Hronec, Schwarz, Jakubík, Švec, Greguš, Mišík, Kluvánek, Riečan, Znám, Eliáš, Ivan, Šulka, Gatial, Porubský, Horák, Riečanová. In 2011 the Department of mathematics was incorporated to the Institute of Informatics and Mathematics.

Activities 2015

Conference: *10th Workshop on Functional Analysis and its Applications in Mathematical Physics and Optimal Control,* Kočovce, Slovakia, 7-12.9.2015

Directions, Future Trends, and Priorities

- Increased grant funding of the department.
- Continual improvement of educational process in mathematics.
- Improvement of pedagogical work with students, especially in the first semester.

I. STAFF OF INSTITUTION

Professors	Igor Bock, Otokar Grošek, Gabriel Juhás, Miloš Oravec
Associate Professors	Martin Drozda, Ľubomír Marko, Oľga Nánásiová, Karol Nemoga, Vladimír Olejček, Marcel Polakovič, Boris Rudolf, Michal Šrámka, Milan Vojvoda, Michal Zajac, Pavol Zajac
Assistant Professors	Štefan Balogh, Igor Brilla, Viera Čerňanová, Karla Čipková, Ondrej Gallo, Alexander Hambalík, Viliam Hromada, Matúš Jókay, Mária Kečkemétyová, Igor Kossaczký, Ivica Marinová, Vladislav Novák, Dávid Pancza, Elena Pastuchová, Marek Sýs, Zuzana Ševčíková, Michal Zakopčan
Research Workers	Stanislav Marček
Technical Staff	Zuzana Šabíková (Head), Emília Komžíková, Zuzana Šedová
PhD. Students	Eugen Antal, Csaba Cserba, Maroš Čavojský, Tomáš Fabšič, Vojtěch Jirka, Igor Kazlov, Pavol Marák, Stanislav Marček, Ján Mazanec, Ľuboš Omelina, Alexandra Posoldová, Andrej Savka, Dominik Sopiak, Juraj Varga, Tomáš Žilka, Viktória Žilková

II. EQUIPMENT

II. 1 Teaching and Research Laboratories

- IT Sec Laboratory
- DIEDC - Database Information Education and Demonstration Center
- Laboratory of Medical Informatics
- Laboratory of Communication Networks
- Experimental Laboratory of Institute
- Library of Department of mathematics
- Antivirus lab

II. 2 Special Measuring Instruments and Computers

- HP Proliant ML 150
- 2x CPU INTEL XEON 2,8 GHz
- RAM 12 GB
- HDD 35 GB
- MSDN Academic Alliance (MSDN AA) = Microsoft Developers Network Academic Alliance

Mobile Computing & Petri Net Lounge Lab:

- CPU 4-core Intel Xeon E5-1620v3/RAM 256GB/SSD 256GB RAID0/HDD 2TB RAID5

- CPU 8-core AMD FX-9590/RAM 32GB/SSD 256GB/ HDD 3TB/GPU 2x NVIDIA GTX970 v SLI

- CPU 4-core Intel i7-4790/RAM16GB/SSD 256GB/ HDD 1TB Raid1

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Analysis and Complexity of Algorithms	(5th and 6th sem. 3-1 h)	M. Vojvoda
Architecture of Computer Systems	(6th sem. 2-2)	I. Kossaczký
Basics of Finance	(2nd sem. 1-2 h)	M. Zákopčan
Calculus 1	(1st sem. 4-2 h)	M. Zajac/ B. Rudolf
		E. Pastuchová/ K. Čipková/
		M. Zákopčan
		M. Kečkemétyová/
		O. Nánásiová
Calculus 2	(2nd sem. 4-2 h)	K. Čipková/I. Brilla/
		V. Čerňanová/B. Rudolf/
		O. Nánásiová
Calculus 3	(3rd sem. 3-2 h)	Ľ. Marko/
Calculus 4	(4th sem. 3-2 h)	V. Olejček/D. Pancza

Classical Ciphers	(4th and 5th sem. 2-2 h)	O. Grošek
Communication Network 1	(4th sem. 3-1 h)	M.Oravec
Communication Network 2	(6th sem. 4-1 h)	A.Hambalík
Computer Crimes	(6th sem. 2-2 h)	Š. Balogh
Discrete Event Systems	(3rd sem. 2-2 h)	G.Juhás
Fast Algorithms	(6th sem. 2-2 h)	K. Nemoga
Introduction to Computer Science	(4th sem. 3-2 h)	V. Hromada
Management of IT projects	(5th sem. 2-2 h)	O. Malý
Mathematical Analysis1	(1st sem. 4-2 h)	Ľ. Marko/ M. Zákopčan
Linear Algebra	(3th and 4th sem. 2-2 h)	M. Zajac
Operating Systems	(3rd sem. 3-2 h)	M. Jókay
Partial Differential Equations	(4th sem. 2-2 h)	I. Bock
Probability and Statistics	(6th sem. 2-2 h)	V. Olejček
Programming Techniques	(2nd sem. 3-2 h)	M. Drozda
Software Application Development	(5th sem. 2-2 h)	M. Šrámka
Statistical Methods in Informatics	(4th sem. 3-2 h)	E. Pastuchová/I. Marinová
Workflow Management Systems	(6th sem. 2-2 h)	P. Frič

III.2 Graduate Study (Ing.)

Analysis and Synthesis of Event Systems	(2nd sem. 3-2 h)	G. Juhás
Coding Theory	(1st sem. 3-1 h)	K. Čipková
Cryptography	(1st sem. 2-2 h)	O. Grošek
Design and cryptanalysis of ciphers	(3rd sem. 2-2 h)	M.Vojvoda/ P.Zajac/ M.Sýs
Design of Ciphers	(2nd sem. 3-2 h)	P. Zajac
Introduction to computer security	(1st sem. 2-1 h)	P. Zajac
Knowledge representation	(1st+3rd sem. 2-2 h)	I. Kossaczký
Logics	(1st and 3th sem. 3-2h)	K. Nemoga
Machine Learirng and Neural Networks	(1st+3rd sem. 2-2 h)	M. Oravec
Mathematics	(1st sem. 3-2 h)	I. Bock
Mobile computing	(3rd sem. 2-2 h)	M. Drozda
Modelling and Simulations of Event Systems	(1st sem. 2-2 h)	G. Juhás
Network encryption	(1st sem. 3-2 h)	M. Sýs
Paralel programming and distributed systems	(3rd sem. 2-2 h)	M. Jókay
Practice of Security of Information Systems	(2nd sem. 3-2 h)	M. Šramka
Social, ethical and legal aspects of information systems	(3rd sem. 3-0 h)	M. Šramka
System Programming	(2st sem. 3-2 h)	M. Jókay
Software architecture	(3rd sem. 2-2 h)	I. Kossaczký
Theory of Fuzzy Systems	(1st sem. 3-2 h)	O. Nánásiová

III.3 Undergraduate and Graduate Study for Foreign Students (in English Language)

Analysis and Complexity of Algorithms		M. Vojvoda
Architecture of Computer Systems		I. Kossaczký
Basics of Finance		M. Zákopčan
Calculus 1		M. Zajac

Calculus 2	K. Čipková
Calculus 3	Ľ. Marko
Computer Architecture	M. Jókay
Discrete Event Systems	V. Hromada
Design and cryptanalysis of ciphers	M.Vojvoda/ P.Zajac/ M.Sýs
Design of Ciphers	P. Zajac
Financial Management	M. Zákopčan
Mobile computing	M. Drozda
Logics	K. Nemoga
Practice of Security of Information Systems	M. Šramka
Computer Networks	J. Varga
Programming Techniques	V. Hromada
Fast Algorithms	K. Nemoga
Object Oriented Programming	V. Jirka
Software Application Development	M. Šrámka
Social, ethical and legal aspects of information systems	M. Šrámka
System Programming	M. Jókay

III.4 Distance Study

Calculus 2	(2nd sem. 6x2h konzul.)	I. Brilla
Calculus 3	(3rd sem. 6x2h konzul.)	Ľ Marko
Calculus 4	(4th sem. 6x2h konzul.)	V. Olejček
Linear Algebra	(3th and 4th sem. 2-2 h)	M. Zajac

III.5 Postgraduate Study

Finite fields	O. Grošek
Mathematics for PhD Students	I. Bock
Subject of specialization Applied Informatics I	M. Drozda
Subject of specialization Applied Informatics II	M. Drozda
Statistical methods in computer science	O. Grošek
Stochastic processes and methods	V. Olejček
Theorie in the field of Applied Informatics	M. Drozda

IV. RESEARCH PROJECTS

IV.1 National Scientific Projects

- **Dynamic Contact Task,** VEGA 1/0426/12 **Duration:** 01.2012-21.12.2015 (I. Bock)
- **Digital Signatures Power Analysis Attack and Countermeasures,** APVV-0586-11 **Duration**: 01.08.2012 - 31.07.2015 (O. Grošek)
- **Proposal of Advanced Methods of Biometric Recognition Based on Face and Iris Images-** VEGA 1/0529/13-**Duration**: 2013-2016 (M. Oravec)
- **Privacy on mobile devices-** VEGA 1/0173/13- **Duration:** 2013-2015 (P. Zajac)

- **Medzinárodné centrum excelentnosti pre výskum inteligentných a bezpečných informačno-komunikačných technológii a systémov**, **OPVaV- ITMS**: 26240220039, **Duration:** 02/2014-10/2015
- **SECOSYS – Security and privacy in mobile computing ecosystems Duration:** 2015-2016 (M. Drozda)

IV.2 International Scientific Projects

- **Secure Implementation of Post-Quantum Cryptography**, NATO– NPD: SfP 984520
  Duration: 2013-2015 (O.Grošek)
- **Cryptography brings security and freedom** (SK06-IV-01-001) Duration: 4/2015-3/2016 (O.Grošek)

V. COOPERATION

V.1 Cooperation in Slovakia

- National Security Authority, Bratislava
- Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava
- Association of the Infovek Project, Ministry of Education of the Slovak Republic – Project of Informatization of Regional School – PIRŠ
- Slovak Research and Development Agency, Bratislava
- Faculty of Chemical and Food Technology, STU, Bratislava
- Technical University, Zvolen
- J. Selye University, Komárno
- Bratislava Metodical and Pedagogical Centre
- Trenčín Metodical and Pedagogical Centre
- Virtual Academy of Bratislava Self-Governing Region
- University of Constantin the Philosopher, Nitra
- Department of Engineering Pedagogy and Psychology, MtF STU Bratislava
- Ministry of Finance of the SR
- Institute of Measuremet, Slovak Academy of Sciences, Bratislava
- Slovak Standards Institute
- Ministry of Health of the SR, Strategic Targets of Health
- Security Authority of the Ministry of Defence of the SR
- Institute of Forensic Science of Police Corps, Bratislava
- ÚIPŠ Bratislava
- Elfa, Ltd. Košice
- Datalan, Ltd. Bratislava
- Centre of Distance Education (SDV ICV CUP REK), Bratislava
- - Centire**,** Ltd. Bratislava
- Mathematical Institute, Slovak Academy of Sciences, Bratislava
- Fakulty of Management, Comenius University, Bratislava
- Department of Mathematics and Descriptive Geometry, Faculty of Civil Engineering, STU, Bratislava
- Department of Structural Mechanics, Faculty of Civil Engineering, STU, Bratislava
- Department of Mathematical Analysis, FMPI,Comenius University, Bratislava
- Department of Mathematics, Armed Forces Academy, Liptovský Mikuláš
- Department of Mathematics, Faculty of Mechanical Engineering, STU, Bratislava
- Institute of Information Engineering, Automation and Mathematics, Faculty of Chemical and   Food Technology, STU, Bratislava

V.2 International Cooperation

- Institute of Informatics, Academy of Sciences of the Czech Republic, Prague, CzR
- University of LA LAGUNA, Department of Statistics, Operations Research and Computing, Tenerife, Spain
- Department of Information Systems Security, Concordia University College of Alberta, Canada
- Faculty of Informatics MU Brno, CzR
- Department of Mathematics, Faculty of Electrical Engineering, ČVUT Prague, CzR
- Lehrstuhl fuer Angewandte Informatik, Katholische Universitaet Eichstaett-Ingolstadt, Germany
- Fachgruppe Simulation und Modellierung, Institut fuer Systems Engineering, Universitaett Hannover, Germany
- Florida Atlantic University, Boca Raton, Florida, USA
- Department of Mathematics, University of Washington, Tacoma, Washington, USA
- Institute for Experimental Mathematics, University of Essen, Germany
- Department of Mathematics and Science, Indiana State University, USA
- Eszterházy Károly College, Eger, Hungary
- AINTEK A.E, Greece
- Virginia Tech, Blacksburg, Virginia, USA
- McMaster University, Hamilton, Canada
- University of Waterloo, Canada
- University of Toronto, Canada
- Universität Ausgsburg, Germany
- Institut for Informatikk, Universitetet i Bergen, Norway
- Laboratoire Hubert Curien, Université Jean Monnet, Saint –Etienne, France
- Ecole Nationale de Police, Montbéliard, France
- Technische Universiteit Eindhoven, Eindhoven, The Netherlands
- University of Southampton, UK
- MINT, Emmy Noether Verein, Ulm, Germany
- Institut für Algebra und Computermathematik TU Vienna, Austria
- Department of Mathematics, FEE CTU, Prague, CzR
- Academy of Sciences of the Czech Republic, Prague, CzR
- Department of Mathematics, Faculty of Natural Sciences of MU, Brno, CzR
- Institut de Mathématique, Université Louis Pasteur, Strasbourg, France
- Math. Institute, Polish Academy of Sciences, Warsaw, Poland
- University of Ljubljana, Slovenia
- Institute of Nuclear Physics, Academy of Sciences of the Czech Republic ,   Rez near Prague, CzR
- Department of Mathematics, Zhejiang University Hangzhou, China
- Institutt for Informatikk, Universotetet i Bergen, Norway

V.3 Contracts

VI . THESES

VI.1 Masters Theses

Masters theses supervised at the Institute of Computer Science and Mathemetics. The names of supervisors are in brackets.

- **Balogh Ľubomír:** Parallel Computing Using FPGA (O. Gallo)
- **Čajkovič Peter:** Radioactivity monitoring station located in Bratislava - Mlynska dolina (K. Vitázek)

- **Černá Alena:** Decoders for BCH codes (K. Nemoga)
- **Drobec Ján:** Web applications with Petri nets to background (S. Marček)
- **Gedaj Matúš:** The influence on stress and music on drivers behavior (M. Kukučka)
- **Gulyás Andrej:** Implementation of QC-MDPC McEliece cryptosystem (P. Zajac)
- **Guzmický Martin:** Composition construction of S-boxes (P. Zajac)
- **Hýl Peter:** Protection of property rights in music (O. Grošek, konzultant J. Šiška)
- **Charvát Juraj:** The safety of the future payment systems (O. Grošek, konzultant J. Šiška)
- **Jarinčík Peter:** The system for verifying the user's identity using contextual information (M. Drozda)
- **Jašura Patrik:** Mobile system for deaf people (I. Kazlov)
- **Kaničár Martin:** Cryptanalysis of lightweight stream cipher WG-8 (V. Hromada)
- **Khandl Tomáš:** Design of steganography repository in video (M. Jókay)
- **Klein Marek:** Side Channels in SW Implementation of the McEliece PKC (P. Zajac)
- **Koma Tibor:** Resource management within Xen hypervisor virtualization environments (C. Cserba)
- **Kolimár Ondrej:** Multiple criteria and multiple variant decision making in social networks environment (Š.Kozák)
- **Kósa Péter:** Creating Web Application for Administration of Hypervisor Xen (C. Cserba)
- **Kudláč Jozef:** Analysis of RSA keys in slovak SSL certificates (M. Šrámka)
- **Kušnirák Kamil:** Providing geospatial data using WFS standard (O. Gallo)
- **Leitner Andrej:** Support system in sport analytics (M.Jókay)
- **Ližičiar Michal:** Anonymization module for Firefox (M. Jókay)
- **Mach Roman:** Individual network interface settings for web browser Firefox (M. Jókay)
- **Machovec Filip:** BPCS-steganography Steganalysis (M. Vojvoda)
- **Maláč Miroslav:** Refactoring of plug-in module for UML diagrams (M. Polakovič)
- **Maras František:** Laboratory experiment control via internet enviroment (K. Žáková)
- **Markusek Matúš:** Using of internet publication resources for generation of citation index (K. Žáková)
- **Molnár Gábor:** Advanced methods of 3D reconstruction (M. Sýs)
- **Nižnanská Miriama:** The application for editing and software support of hybrid Petri nets (D. Rosinová)
- **Novák Jakub:** Getting appropiate solutions of synthesis of Petri nets (C. Cserba)
- **Ondrejkovič Matúš:** Module for virtual and remote laboratories in the Moodle system (P. Bisták)
- **Papson Boris:** Collecting data from sensors in mobile phones (S. Marček)
- **Paučo Martin:** Modeling of automated storage systems using Petri nets (A. Kozáková)
- **Prichocká Michaela:** Application of neural networks for evaluation quality of weld (A. Kozáková)
- **Rakár Radoslav:** Segmentation of important areas in the images of the retina (J. Pavlovičová)
- **Regenda Patrik:** Concurrent, distributed and fault tolerant applications in context of batch data processing (I. Kossaczký)
- **Rýznar Karol:** Payment systems in mobile devices (M. Šrámka)
- **Sabo Miroslav:** System for Remote Development and Evaluation of Java Programs (M. Polakovič)
- **Szabo Tomáš:** The application for creating interactive animations for web browsers (M. Polakovič)
- **Šlezinger Viliam:** The system for storing notes in the area (M. Drozda)
- **Špilka Marian:** Context Analysis of Text (G. Rozinaj)
- **Štefanková Zuzana:** Conversion of sound to dynamic picture (I. Kazlov)
- **Štefka Pavol:** Mobile application for remote experiments control (K. Žáková)
- **Šúň Andrej:** Development of a Windows Phone application for modelling and simulation of Petri nets based on cloud solutions (C. Cserba)
- **Táčovská Lenka:** Detection of retina mutations disease (M. Oravec)
- **Tančibok Ján:** Android SysLogger (S. Marček)
- **Tkáčik Pavol:** Automated system for recognition of originality of images (A. Hambalík)
- **Tuhý Filip:** Design and implementation of web application for modeling and simulation of Petri nets in the matter of cloud solutions (C. Cserba)
- **Uhrecký František:** Implementation of cryptographic library with McEliece cryptosytem (P. Zajac)
- **Ustaník Michal:** Remote control of laboratory experiment (K. Žáková)
- **Varga Jaroslav:** Bigdata Analysis, mobile device data analysis (S. Marček)
- **Varchola Marek:** Enhancement of authentication system for Android device (P. Zajac)
- **Virgovič Miroslav:** Methods of classification traffic in communication networks (M. Oravec)
- **Werdenichová Petra:** Cloud solution IaaS (C. Cserba)

- **Zboroň Matej:** Automatic creation of LPO from timing diagrams (O. Gallo)

VI.2 PhD. Theses

- **Ing. Matej Féder** – Proposal of Methods of Feature Extraction and Classification in Biometrics (prof. M. Oravec)
- **Ing. Marek Repka –** Improving CPA of (EC)DSA and Timing Analysis of McEliecePKC (prof. O.Grošek)

VI.3 Habilitation Theses

VI.4 Inauguration Talk

VII. OTHER ACTIVITIES

- Seminar: Crypto (O. Grošek)
- Seminar: Machine Learning (M. Oravec)
- Seminar: Variational inqualities and optimal control on mechanics (I. Bock)
- Seminar: Ordinary differential equations (B. Rudolf)
- Seminar: Mathematics Applications (O. Nánásiová)
- Reviewer of ZentralblattMath (K. Nemoga, O. Grošek)

VIII. MEMBERSHIP IN INSTITUTIONS AND COMMITTEES

VIII.1 Membership in National Institution/Committees

- Member of – JSMF- Union of Slovak Mathematicians and Physicists (I. Bock, M. Kečkemétyová, I. Marinová, V. Olejček, E. Pastuchová, B. Rudolf, M. Polakovič, M. Zajac, J.Fogel, O. Grošek, K. Nemoga)
- Member of – Slovak Society for mechanics (I. Bock, I. Brilla, Ľ. Marko)
- Member of – Slovak Statistical and Demographic Society (E. Pastuchová)
- Member of- Mathematica Slovaca, Springer (editors: I.Bock, M. Zajac)

VIII.2 Membership in International Institution/Committees

- Member of AMS – American Mathematical Society (O. Grošek, I. Bock, V. Olejček)
- Member of IACR- International Association for Cryptologic Research (K. Nemoga)
- Member of - IEEE (Institute of Electrical and Electronics Engineers) Institution of Engineering and Technology (M. Oravec)
- Member of ISIMM - International Society for the Interaction of Mechanics and Mathematics (I. Brilla)
- Member of IQSA - International Quantum Structures Association (V. Olejček)
- Member of Bernoulli's Society (V. Olejček)
- Member of IACM - International Association for Computational Mechanics (I. Brilla, Ľ. Marko)
- Member of - Emmy Noether Society (I.Marinová, E.Pastuchová)
- Member of - GAMM - Gesellschaft für Angewandte Mathematik und Mechanik (I. Bock)
- Member of - ISSMO - Society for Structural and Multidisciplinary Optimization (I. Bock)
- Member of European Cooperation in the field of Scientific and Technical Research (COST) Action IC1306:
- Cryptography for Secure Digital Interaction.(O. Grošek)

IX. PUBLICATIONS

Books

1. JUHÁS, Gabriel. *Modelling of concurrent systems*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 90 p. ISBN 978-80-227-4524-6. (in English)

Parts of Books

1. ŠRÁMKA, Michal. Evaluating Privacy Risks in Social Networks from the User's Perspective. In *Studies in Computational Intelligence*. Vol. 567 : Advanced Research in Data Privacy. Springer 2015, p. 251-267. ISSN 1860-949X. (in English)

Journals

1. ANTAL, Eugen - ZAJAC, Pavol. Key Space and Period of Fialka M-125 Cipher Machine. In *Cryptologia*. Vol. 39, No. 2 (2015), p. 126-144. ISSN 0161-1194. (in English)
2. BOCK, Igor - JARUŠEK, Jiří. A vibrating thermoelastic plate in a contact with an obstacle. In *Tatra Mountains Mathematical Publications*. Vol. 63, (2015), p. 39-52. ISSN 1210-3195. (in English)
3. BOCK, Igor - KEČKEMÉTYOVÁ, Mária. Regularized optimal control problem for a beam vibrating against an elastic foundation. In *Tatra Mountains Mathematical Publications*. Vol. 63, (2015), p. 53-71. ISSN 1210-3195. (in English)
4. BRILLA, Igor - JANÍČEK, František. Numerical solution of boundary inverse problems for plane orthotropic elastic solids. In *International Journal of Mechanics*. Vol. 9, (2015), p. 323-328. ISSN 1998-4448. (in English)
5. BRUNOVSKÝ, Pavol - ZÁKOPČAN, Michal. Equilibria and stable paths in infinite horizon nonlinear control problems: The linear-quadratic approximation. In *Acta Mathematica Universitatis Comenianae*. Vol. 84, No. 1 (2015), p. 79-96. ISSN 0862-9544. (in English)
6. HAMBALÍK, Alexander - MARÁK, Pavol. Image content software analysis. In *Trends in education*. Vol. 8, Iss. 1 (2015), p. 71-80. ISSN 1805-8949. (in English)
7. HROMADA, Viliam - VARGA, Juraj. Phase-shift fault analysis of Trivium. In *Studia Scientiarum Mathematicarum Hungarica*. Vol. 52, No. 2 (2015), p. 205-220. ISSN 0081-6906. (in English)
8. NÁNÁSIOVÁ, Oľga - KALINA, Martin. Calculus for Non-Compatible Observables, Construction Through Conditional States. In *International Journal of Theoretical Physics*. Vol. 54, No. 2 (2015), p. 506-518. ISSN 0020-7748. (in English)
9. PASTUCHOVÁ, Elena - ZÁKOPČAN, Michal. Comparison of algorithms for fitting a gaussian function used in testing smart sensors. In *Journal of Electrical Engineering*. Vol. 66, No. 3 (2015), p. 178-181. ISSN 1335-3632. (in English)

10. PYKACZ, Jaroslaw - VALÁŠKOVÁ, Ľubica - NÁNÁSIOVÁ, Oľga. Bell-Type Inequalities for Bivariate Maps on Orthomodular Lattices. In *Foundations of Physics*. Vol. 45, no. 8 (2015), p. 900-913. ISSN 0015-9018. (in English)

11. REPKA, Marek - VARCHOLA, Michal. Correlation Power Analysis using Measured and Simulated Power Traces based on Hamming Distance Power Model - Attacking 16-bit Integer Multiplier in FPGA. In *International Journal of Computer Network and Information Security*. Vol. 7, No. 6 (2015), p. 10-16. ISSN 2074-9104. (in English)

12. REPKA, Marek - VARCHOLA, Michal - DRUTAROVSKÝ, Miloš. Improving CPA attack against DSA and ECDSA. In *Journal of Electrical Engineering*. Vol. 66, No. 3 (2015), p. 159-163. ISSN 1335-3632. (in English)

13. ZAJAC, Pavol. Impossible differential attacks on 4-round DES-like ciphers. In *International Journal of Computers and Communications*. Vol. 9, (2015), p. 56-61. ISSN 2074-1294. (in English)

14. ZAJAC, Pavol. Constructing S-boxes with low multiplicative complexity. In *Studia Scientiarum Mathematicarum Hungarica*. Vol. 52, No. 2 (2015), p. 135-153. ISSN 0081-6906. (in English)

Conference Proceedings

1. BOCK, Igor - JARUŠEK, Jiří - ŠILHAVÝ, Miroslav. On an acceleration term in a dynamic contact of plates with a rigid obstacle. In *10th Workshop on functional analysis and its applications in mathematical physics and optimal control*. Bratislava : STU in Bratislava, 2015, p. 7-11. ISBN 978-80-227-4411-9. (in English)

2. BOCK, Igor. Dynamic contact of beams with rigid obstacles. In *New Trends in Statics and Dynamics of Buildings : proceedings of 13th International Conference. Bratislava, Slovakia, 15. - 16. 10. 2015*. Bratislava : Slovak University of Technology in Bratislava, 2015, CD-ROM, [6] p. ISBN 978-80-227-4463-8. (in English)

3. BRILLA, Igor - JANÍČEK, František. Numerical determination of elastic coefficients for orthotropic plates. In *CAIP´2015 : 12° Congreso interamericano de computación aplicado a la industria de procesos. Cartagena de Indias, Colombia. 14 al 17 de Septiembre de 2015*. Bogotá : Universidad Libre, 2015, CD-ROM, [6] p. ISBN 978-958-8791-82-1. (in English)

4. FABŠIČ, Tomáš - GROŠEK, Otokar - NEMOGA, Karol - ZAJAC, Pavol. On constructing invertible circulant binary(n x n)-matrices with n2/2 ones. In *CECC 2015 : Book of abstracts: 15th Central European conference on cryptology. Klagenfurt am Wörthersee, Austria, July 8-10, 2015*. Vienna : Alpen-Adria-Universität Klagenfurt, 2015, p. 10-12. (in English)

5. GULÁŠOVÁ, Michala - JÓKAY, Matúš. Steganalysis of stegostorage system. In *CECC 2015 : Book of abstracts: 15th Central European conference on cryptology. Klagenfurt am Wörthersee, Austria, July 8-10, 2015*. Vienna : Alpen-Adria-Universität Klagenfurt, 2015, p. 17-18. (in English)

6. JANÍČEK, František - CERMAN, Anton - PERNÝ, Milan - BRILLA, Igor - MARKO, Ľubomír - MOTYČÁK, Štefan. Applications of superconducting quantum interference devices. In *Electric power engineering 2015 : 16th International scientific conference on electric power engineering (EPE). Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 429-432. ISBN 978-1-4673-6787-5. (in English)

7. KEČKEMÉTYOVÁ, Mária - BOCK, Igor. Regularized optimal control problem for an anisotropic plate vibrating against an elastic foundation. In *10th Workshop on functional analysis and its applications in mathematical physics and optimal control*. Bratislava : STU in Bratislava, 2015, p. 18-23. ISBN 978-80-227-4411-9. (in English)

8. KEČKEMÉTYOVÁ, Mária - BOCK, Igor. An optimal design problem for a Mindlin-Timoshenko beam vibrating against an elastic foundation. In *New Trends in Statics and Dynamics of Buildings : proceedings of 13th International Conference. Bratislava, Slovakia, 15. - 16. 10. 2015*. Bratislava :

Slovak University of Technology in Bratislava, 2015, CD-ROM, [4] p. ISBN 978-80-227-4463-8. (in English)

9. KURILOVÁ, Veronika - PAVLOVIČOVÁ, Jarmila - ORAVEC, Miloš - RAKÁR, Radoslav - MARČEK, Igor. Retinal blood vessels extraction using morphological operations. In *IWSSIP 2015 : 22nd International conference on systems, signals and image Processing. London, United Kingdom. 10 - 12 September 2015*. London : City University London, 2015, p. 265-268. ISBN 978-1-4673-8352-3. (in English)

10. LEHOTA, Ľuboš - ORAVEC, Miloš. Comparison of network traffic classification using single statistical feature versus classification using two features. In *IN-TECH 2015 : Preceedings of the International conference on innovative technologies. Dubrovnik, Croatia. 09.-11.09.2015*. Rijeka : Engineering University of Rijeka, 2015, p. 186-189. ISSN 1849-0662. (in English)

11. LODERER, Marek - PAVLOVIČOVÁ, Jarmila - ORAVEC, Miloš - MAZANEC, Ján. Face parts importance in face and expression recognition. In *IWSSIP 2015 : 22nd International conference on systems, signals and image Processing. London, United Kingdom. 10 - 12 September 2015*. London : City University London, 2015, p. 188-191. ISBN 978-1-4673-8352-3. (in English)

12. MARKO, Ľubomír. Thickness optimization of a dynamic axisymmetric circular plate on an elastic foundation. In *New Trends in Statics and Dynamics of Buildings : proceedings of 13th International Conference. Bratislava, Slovakia, 15. - 16. 10. 2015*. 1. Bratislava : Slovak University of Technology in Bratislava, 2015, CD-ROM, [4] p. ISBN 978-80-227-4463-8. (in English)

13. ORAVEC, Miloš - SOPIAK, Dominik - JIRKA, Vojtěch. Face recognition on mobile devices based on client-server architecture. In *Redžúr 2015 : 9th International workshop on multimedia and signal processing. Smolenice, Slovakia. April 22-23, 2015*. Bratislava : STU in Bratislava, 2015, p. 15-18. ISBN 978-80-227-4346-4. (in English)

14. ORAVEC, Miloš - SOPIAK, Dominik - JIRKA, Vojtěch - PAVLOVIČOVÁ, Jarmila - BUDIAK, Mark. Clustering algorithms for face recognition based on client-server architecture. In *IWSSIP 2015 : 22nd International conference on systems, signals and image Processing. London, United Kingdom. 10 - 12 September 2015*. London : City University London, 2015, p. 241-244. ISBN 978-1-4673-8352-3. (in English)

15. PANCZA, Dávid - BOCK, Igor. Dynamic contact of Mindlin-Timoshenko beam with a rigid obstacle. In *New Trends in Statics and Dynamics of Buildings : proceedings of 13th International Conference. Bratislava, Slovakia, 15. - 16. 10. 2015*. Bratislava : Slovak University of Technology in Bratislava, 2015, CD-ROM, [7] p. ISBN 978-80-227-4463-8. (in English)

16. POLAKOVIČ, Marcel. D-weak operator topology and some its properties. In *10th Workshop on functional analysis and its applications in mathematical physics and optimal control*. Bratislava : STU in Bratislava, 2015, p. 46-47. ISBN 978-80-227-4411-9. (in English)

17. RUDOLF, Boris. On the landesman-lazer condition for three point boundary value problem at resonance. In *10th Workshop on functional analysis and its applications in mathematical physics and optimal control*. Bratislava : STU in Bratislava, 2015, p. 48-50. ISBN 978-80-227-4411-9. (in English)

18. SÝS, Marek - ŘÍHA, Zdeněk - VASHEK, Matyáš. NIST statistical test suite - result interpretation and optimization. In *SantaCrypt 2015. Prague, Czech Republic, 3. - 4. 12. 2015*. Bílovice nad Svitavou : Trusted Network Solutions, 2015, p. 14-17. ISBN 978-80-904257-7-4. (in English)

19. VARGA, Juraj - GULÁŠOVÁ, Michala - OREM, Martin - DOBROČKA, Pavol - NOVOTNÝ, Daniel - BOLEDOVIČ, Andrej. Mitigating possible threats from overprivileged android applications. In *IN-TECH 2015 : Preceedings of the International conference on innovative technologies. Dubrovnik, Croatia. 09.-11.09.2015*. Rijeka : Engineering University of Rijeka, 2015, p. 42-45. ISSN 1849-0662. (in English)

20. VARCHOLA, Michal - DRUTAROVSKÝ, Miloš - REPKA, Marek. Robust FPGA based True Random Number Generator utilizing Oscillatory Metastability in Transition Effect Ring Oscillators. In *Advances*

in Circuits, Systems, Signal Processing and Telecommunications : Proceedings : WSEAS, 2015, p. 90-96. ISSN 1790-5117. ISBN 978-1-61804-271-2. (in English)

21. ZAJAC, Michal. Examples of morphisms of operator effect algebras. In *10th Workshop on functional analysis and its applications in mathematical physics and optimal control*. Bratislava : STU in Bratislava, 2015, p. 57-58. ISBN 978-80-227-4411-9. (in English)

22. ZAJAC, Pavol - HROMADA, Viliam - ÖLLÖS, Ladislav. A few notes on algebraic cryptanalysis. In *CECC 2015 : Book of abstracts: 15th Central European conference on cryptology. Klagenfurt am Wörthersee, Austria. July 8-10, 2015*. Vienna : Alpen-Adria-Universität Klagenfurt, 2015, p. 44-45. (in English)

23. ZAJAC, Pavol. On algebraic cryptanalysis of ciphers with low multiplicative complexity. In *WCC 2015 : 9th International workshop on coding and cryptography. Paris, France. April 13-17, 2015*. Paris : INRIA, 2015, [9] p. (in English)

INSTITUTE OF ELECTRICAL ENGINEERING

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	Secretary of the Institute: Ružena Nagyová	Tel: ++421-2-654 29 600 Fax: ++421-2-654 40 227 e-mail: ruzena.nagyova@stuba.sk

GENERAL INFORMATION:

The Institute of Electrical Engineering FEI STU is a direct successor of the Institute of Theoretical and Applied Electrical Engineering at the Slovak Technical University (SVŠT). This Institute was the first establishment of the Department of Electrical Engineering at the Faculty of Mechanical and Electrical Engineering of SVŠT in Bratislava and hence, it became the foundation institution for education of electrical engineers in Slovakia. This institute was constituted together with the Faculty in 1941. The founder of the Institute was Prof. Dr. Ing. Ľudovít Kneppo, DrSc. who was also appointed the first Dean of the Faculty of Electrical Engineering at SVŠT, after it gained its autonomy. Right from the beginning, the Institute addressed all theoretical and engineering aspects of electro-technology including measuring methods which were an integral part of the branch. Due to the broad scope of its scientific profile, several departments and working groups were formed within the institute. In the 1950s the Institute was renamed to Department of Theoretical and Applied Electrical Engineering (KTEE) and as such it existed until 2011.

The Group of Electrical Measurement was gradually extending its profile. The initial year of education in the area of Measurement Technology, branch of Technical Cybernetics was 1974. Due to the growing volume and extent of work both in teaching and research, the foundation of a separate Department of Measurement became inevitable. This happened by splitting of KTEE in 1980, when the Department of Measurement (KMER) was established. On the 1st May 2011 these two departments merged and gave rise to the Institute of Electrical Engineering that finished the evolution by returning to its roots after 31 years.

Departments of the Institute:

Department of Measurement – Department Chair
doc. Ing. Mikuláš Bittera, PhD.
Department of High-frequency Techniques and Optoelectronics - Department Chair
prof. Ing. Jozef Jasenek, PhD.
Department of Electromagnetic Theory - Department Chair
doc. Ing. Elemír Ušák, PhD.
Department of Electromagnetic Structures and Systems Modelling - Department Chair
doc. Ing. René Harťanský, PhD.

I. STAFF

Professors	Jozef Jasenek, Viktor Smieško, professor emeritus Július Bajcsy, professor emeritus Jozef Sláma
Associate Professors	Mikuláš Bittera, Ján Bydžovský, Rastislav Dosoudil, René Harťanský, Vladimír Jančárik, Karol Kováč, Rudolf Ravas, Ľubomír Šumichrast, Elemír Ušák
Assistant Professors	Jozefa Červeňová, Oľga Čičáková, Jaroslav Franek, Miroslav Kamenský, Branislav Korenko, Eva Králiková, Marián Štofka
Senior Scientists	Ján Bezek, Vladimír Bilík, Ján Grman, Jozef Hallon, Peter Kukuča, Anton Krammer, Vladimír Olah, Jozef Paľa, Lukáš Maršálka, Peter Mikuš, Lívia Syrová, Martin Šoka, Mariana Ušáková
Technical Staff	Mária Brunovská, Milan Brunovský, Ružena Nagyová, Alojz Vďačný
PhD. Students	Norbert Kaplan, Matej Mičian, Jozef Mikuš, Peter Slížik, Lukáš Šroba, Daniel Vašut, Ferdinand Vavrik

II. EQUIPMENT

II.1 Teaching and Research Laboratories

- National HighTech Centre of Electromagnetic Compatibility (EMC) with a 4,5 x 4,5 x 8,5 m Semi-anechoic Shielded Chamber
- Laboratory of Distributed Measurement Systems
- Laboratory of Digital Signal Processing
- Laboratory of Electrical Measurements
- Laboratory of Nonelectrical Quantities Measurement
- Laboratory of Microprocessor Engineering
- Laboratory of Visual Systems
- Laboratory of Diagnostics Systems
- Laboratory of Power and Energy Measurement
- Laboratory of Optoelectronics
- Laboratory of Signal Processing
- Laboratory of Microwave Technology
- Laboratory of Applied Magnetism
- Laboratory of Magnetic Measurement
- Laboratory of Magnetic Materials Testing
- Laboratory of Magnetic Materials Technology
- Laboratory of Chemical Technology

II.2 Special Measuring Instruments and Computers

- Digital Storage Oscilloscopes up to 1 GHz, 5 GSa/s;
- GPIB System (NI GPIB Interfaces, Agilent 34401A Multimeters, 33120A Generators, 53131A Counters, E364XA Programmable Power Sources);
- EMC Design & Development System (8591A Spectrum Analyzer and 11945A Close Field Probe Set);
- EMC Analyzer Agilent E7405A up to 26GHz;
- RF Measuring Receivers 9 kHz - 7 GHz;
- Handheld Spectrum Analyzer R&S FSH 8 up to 8 GHz;
- Time Domain EMI Measuring Receiver TDEMI 1G up to 1 GHz;
- RF Network Analyzer Agilent E5071C-285 up to 8 GHz;
- Impedance Measurement System Hioki 3522-50, DC - 100 kHz;
- RF Signal Generators up to 20 GHz;
- RF Power Amplifiers for frequency range from 9 kHz to 11 GHz up to 150 W;
- Measuring Antenna Set (BiLog, Biconical, LPDA, Rod, Loop, Horn, Dipole) DC - 40 GHz;
- Electromagnetic Field Intensity Meter (C.A. 42 DC - 400 kHz, HI6105 100 kHz - 6 GHz);
- Analyzers of Single Phase System HA1600 and 3-Phase System KEW6310;
- Set of programmable AC/DC Power Supply Chroma 61503 3x1500VA;
- Electrostatic Discharge Simulators up to 30 kV;
- Electric Fast Transient Simulators;
- Surge Generator Simulators;
- Oscillatory Wave Simulator;
- Line Impedance Stabilization Networks (1-Phase ESH3-Z5 and 3-Phase NNLK8121);
- Reference Noise Generator CGE 01 up to 18 GHz;
- Set of Impedance Stabilization and Coupling/Decoupling Networks;
- EM Field Simulation Computer Station ThinkStation D20 with FEKO Solver;
- Apparatus for Back-Scattering Measurement in Optical Fibers Using Photon Counting Method;
- Spectral Analyser 10 MHz - 4 GHz;
- Precision Wattmeter 104B, 4mW - 60 kW, up to 200 kHz;
- VSM Magnetometer, Hm up to 0.8 MA/m, temperature range 77 K - 800 K;
- Precision Gaussmeter, 1 µT - 10 T at DC, up to 1 kHz AC;
- Lock-In-Amplifier DSP SR 850 2nV to 1V;
- High Coercivity Measuring Apparatus;
- PC Controlled AC/DC Hysteresisgraph;
- Automated System for Magnetic Susceptibility Temperature Dependence Measurement;
- Vibrator DERRITRON SC-3000 – mechanical resistance testing equipment;
- RF Impedance/Material Analyzer HP4191 A 1 MHz-1 GHz, 1 mOhm - 100 kOhm, APC-7 coaxial (50 Ohm) input, GPIB standard; spot, linear and logarithmic frequency sweep;
- HP4192A LF Gain Phase - Impedance Analyser, 5 Hz - 13 MHz, 1 mOhm - 1 MOhm, GPIB;
- Optical Fibre Reflectometer JDSU - MTS 6000L;
- Optical Fibre Polarimeter – POD-101D - General Electronics;
- Vector Network Analyzer Agilent 8714ET, 300 kHz - 3 GHz, GPIB interface;
- Vector Network Analyzer Agilent E5071C, frequency range 9 kHz - 6.5 GHz, S-parameter test set, 2 ports 50 Ohm without bias tees;
- Optical Fibre Spectral Analyzer „Ocean Optics" NIRQuest 512;
- Supercantal Furnace 1016S CLASIC CZ;
- Optical Spectrum Analyser, Anritsu MS 9740A (600 - 1750 nm);
- Digital Phosphor Oscilloscope Tektronix DPO 5204 (2 GHz);
- Broadband optical fiber signal source in L and C band (80nm) up to 10mW;
- Laser fiber sources: wavelength 850nm, 1330nm and 1550nm;
- Microwaves probes U1818B, 100kHz -12GHz
- Microwaves power sensors U2002H, 50HMz -24 GHz, input signal -50dBm – 30dBm.

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of lecturer

Introduction to Engineering	(1st sem., 2-2h)	R. Ravas
Computer Architecture	(2nd sem., 3-2h)	R. Ravas
Electric Circuits I	(2nd+3rd sem., 3-3h)	J. Jasenek
Electrical Engineering I	(2nd+3rd sem., 3-3h)	Ľ. Šumichrast
Theory of Electrical Engineering I	(2nd+3rd sem., 3-3h)	V. Jančárik
Electric Circuits II	(3rd+4th sem., 3-3h)	J. Červeňová
Electrical Engineering	(3rd sem., 2-2h)	E. Ušák
Electrical Engineering 1	(3rd sem., 2-3h)	J. Jasenek
Electrical Engineering 2	(3rd sem., 2-3h)	V. Jančárik
Electrical Engineering 2	(3rd sem., 3-2h)	Ľ. Šumichrast
Measurement Technology 1	(3rd sem., 2-3h)	V. Smieško
Microprocessor Engineering 1	(5th sem., 2-2h)	R. Ravas
Electromagnetic Compatibility	(5th sem., 2-2h)	R. Harťanský
Measurement Technology 2	(5th sem., 2-2h)	M. Bittera
Modelling and Simulation	(5th sem., 2-2h)	L. Syrová, J. Grman
Electrical Engineering II	(4th sem., 3-3h)	Ľ. Šumichrast
Measurement Technology	(3rd sem., 2-2h)	V. Smieško
Theory of Electrical Engineering II	(4th sem., 3-3h)	V. Jančárik
Electromagnetic Field	(4th sem., 3-3h)	J. Franek
Measurement	(4th sem., 2-3h)	M. Bittera
Measurement Technology	(4th sem., 2-3h)	V. Smieško
Measuring Information Systems	(4th sem., 2-2h)	L. Syrová
Theory of Electrical Engineering III	(4th sem., 3-3h)	V. Jančárik
Diagnostics and Testing of Automobiles	(6th sem., 2-2h)	K. Kováč
Microprocessor Engineering	(6th sem., 2-2h)	R. Ravas
Technical Diagnostics	(6th sem., 3-2h)	K. Kováč
Fundamentals of Electrical Engineering Korenko	(FIIT 2th sem., 3-2h)	V. Jančárik, B.
Electronics	(FIIT 3rd sem., 2-2h)	E. Ušák

III.2 Graduate Study (Ing.)

Numeric Diagnostic Systems	(2nd sem., 3-2h)	K. Kováč
Electromagnetic Compatibility	(2nd sem., 3-2h)	R. Harťanský
Diagnostics and Electromagnetic Compatibility	(2nd sem., 3-2h)	K. Kováč
Dielectric and Magnetic Materials	(2nd sem., 2-2h)	E. Ušák
Electrical Engineering III	(2nd sem., 3-2h)	Ľ. Šumichrast
Magnetic Materials and Systems in Mechatronic	(2nd sem., 2-2h)	E. Ušák
Metrology, Testing and Quality Control	(2nd sem., 3-2h)	R. Harťanský

Theory of Measuring Systems	(2nd sem., 3-2h)	L. Syrová
Digital Signal Processing	(1st sem., 2-2h)	K. Kováč
Distributed Measurement Systems	(1st sem., 2-2h)	V. Smieško
Applied Magnetism	(3rd sem., 3-2h)	E. Ušák
Methods and Tools of Artificial Intelligence	(4th sem., 2-3h)	R. Ravas, J. Grman
Telemetry and Distributed Measurement in Automobiles	(4th sem. 2-2h)	V. Smieško
Telemetry and Information Transmission	(4th sem., 3-2h)	M. Bittera
Electromagnetism	(SvF 1st sem., 2-2h)	R. Dosoudil
Methods in Electromagnetism	(SvF 1st sem., 2-2h)	Ľ. Šumichrast, J Červeňová
Designing the Measurement Technique	(2nd sem., 0-6h)	V. Smieško
Analysis and Synthesis of Electric Circuits 2	(1st sem., 3-2h)	E.Ušák
Microprocessor Engineering 2	(1st sem., 2-2h)	K. Kováč, M. Kamenský
Numeric Methods	(1st sem., 2-2h)	Ľ. Šumichrast
Electrical Energy Converters and Power Supplies	(3rd sem., 2-2h)	J. Jasenek. L Maršálka
Social and Legal Aspects in Electrical Engineering	(3rd sem., 2-2h)	M. Bittera
Electromagnetic Devices and Systems	(3rd sem., 2-2h)	V. Jančárik
Design of Measuring Systems	(3rd sem., 2-2h)	R. Harťanský
Computer Vision	(3rd sem., 2-2h)	R. Ravas, J. Grman

III.3 Distance Study (Bc.)

Electrical Engineering	(6th sem.)	K. Kováč
Measurement Technology	(6th sem.)	V. Smieško, L. Syrová
Theory of Electrical Engineering III	(6th sem.,)	V. Jančárik
Technical Diagnostics	(8th sem.)	K. Kováč

III.4 Distance Study (Ing.)

Diagnostic Systems	(1st sem.)	K. Kováč
Electromagnetic Compatibility	(2nd sem.)	R. Harťanský
Methods and Tools of Artificial Intelligence	(2nd sem.)	R. Ravas, J. Grman
Distributed Measuring Systems	(3rd sem.)	V. Smieško
Visual Systems	(3rd sem.)	R. Ravas
Telemetry and Information Transmission	(4th sem.)	P. Kukuča

III.5 Undergraduate Study for Foreign Students (in English Language)

Measurement Technology	(3rd sem.)	V. Smieško, L. Syrová
Electronic Measurement	(4th sem.)	P. Kukuča
Electrical Engineering I	(3rd sem.)	E. Ušák

Electrical Engineering II	(4th sem.)	E. Ušák
Methodology and Measurement	(5th sem.)	L. Syrová
Microprocessor Systems	(7th sem.)	K. Kováč
Measuring Information Systems	(5th sem.)	L. Syrová

III.6 Graduate Study (Ing.) for Foreign Students (in English Language)

| Electromagnetic Interference and Compatibility | (1st sem.) | K. Kováč |

IV. RESEARCH PROJECTS

IV.1 National Scientific Projects

- Advanced Materials and Smart Structures for Electrical Engineering, Electronics and Biomedical Applications Based on Micro- and Nano-sized Ferrite Particles, APVV-0062-11
  Duration: 2012 – 2015 (completed), (E. Ušák)
- Antiplagiarism Analysis of Non-Textual Data, APVV-0469-12
  Duration 2013 – 2017 (continued), (J. Grman)
- Electromagnetic Compatibility of Technological Equipment in Tyre Industry, APVV-0333-11
  Duration: 2012 – 2015 (completed), (M. Bittera)
- MEMS structures based on load cell, APVV-14-0078
- Duration 2016 - 2019, (continued), (R. Harťanský)
- Electromagnetic compatibility at mutual interaction between measuring and tested system, VEGA 1/0431/15 Duration: 2015 – 2018 (continued), (V. Smieško)
- Development of new methods of ferromagnetic materials magnetic parameters measurement focused on non-destructive testing of construction steel and diagnostics of electrical steel, VEGA 1/0571/15
- Duration 2015 - 2017, (continued), (V. Jančárik)
- Research and Optimisation of Selected Parameters of Progressive Magnetic and Multicomponent Composite Materials and Nanomaterials with Required Properties for Applications in Electrical and Mechanical Engineering Industry VEGA 1/1163/12
  Duration: 2012 – 2015 (completed), (R. Dosoudil)
- Teaching diagnostics of mechatronic systems using remote access, KEGA 016STU-4/2014,
- Duration 2014 – 2016, (continued), (M. Kamenský)
- Smart traffic monitoring – fiber optic sensor system, Nadácia Volkswagen Slovakia,
- Duartion 2015 – 2016, (continued), (B. Korenko)

IV.2 International Scientific Projects

- Universal Network for Magnetic Non-Destructive Evaluation" (UNMNDE)
  Duration: since 2005 – (continued), (J. Bydžovský, E. Ušák, J. Paľa)
- SALEIE - Strategic Alignment of Learning in Electrical and Information Engineering, EU Thematic Network Project Coordinated by EAEEIE (European Association for Education in Electrical and Information Engineering)
  Duration: 2013-2015, completed (J. Jasenek, V. Jančárik)
- University Science Park of STU Bratislava, ITMS 26240220084, co-funded by the European Regional Development Fund
- Duration: 2013-2016, continued (V. Smieško)

V. COOPERATION

V.1 Cooperation in Slovakia

- Institute of Measurement Science, Slovak Academy of Sciences, Bratislava
- Slovak Institute of Metrology, Bratislava
- Nuclear Power Plants Research Institute, jsc., Trnava
- Slovak national Accreditation Service
- Slovak Institute of Technical Standardization, Bratislava
- University of Žilina, Žilina
- Alexander Dubcek University of Trenčín in Trenčín
- Volkswagen Slovakia, jsc., Bratislava
- Vývoj Martin, jsc. Martin
- Slovak Electric Transmission System, jsc., Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Detached branches Banská Bystrica
- Institute of Electrical Engineering of Slovak Academy of Sciences, Bratislava
- Institute of Physics of Slovak Academy of Sciences, Bratislava
- Integrity a Safe of Steel Constructions, jsc., Bratislava (IBOK)
- Research and Project Institute of Electrotechnology Nová Dubnica, jsc., (EVPU a.s.)
- Technical University in Košice
- Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava
- Association of Electro-technical Industry of the Slovak Republic, Bratislava
- Sylex, jsc,Bratislava

V.2 International Cooperation

- European Organization for Nuclear Research CERN, Geneve, Switzerland
- Izhevsk State Technical University, Russian Federation
- TU Budapest, Hungary
- Doshisa University, Japan
- Nuclear Engineering Research Laboratory, University of Tokyo, Japan
- Istituto Nazionale di Ricerca Metrologica, Torino, Italy
- TU Ilmenau, Germany
- Cardiff University, Wolfson Centre for Magnetic Technology, United Kingdom
- TU of Czestochowa, Poland
- Warsaw University of Technology
- Lublin Technical University, Poland
- Institute of Physics, Academy of Sciences of Czech Republic, Prague, Czech Republic
- Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, Prague, Czech Republic
- Czech Technical University, Prague, Czech Republic
- West Bohemian University, Pilsen, Czech Republic
- Technical University, Brno, Czech Republic
- CINVESTAV, Saltillo, Mexico
- Research Institute for Technical Physics and Materials Science, Hungarian Academy of Sciences, Budapest, Hungary
- Faculty of Engineering, Universidad Nacional Autonoma de Mexico (UNAM), Ciudad, Mexico
- National Technical University of Athens, School of Mining & Metallurgical Engineering, Athens, Greece
- Leibnitz Institute for Photonic Technologies, Germany
- University Center for Smart Buildings – Czech Technical University Prague, Czech Republic

V.3 Contract-based Business Activities

- V. Smieško et al.: Innovation of the ASZD system – technical supervision. Contract with SEPS, jsc., Bratislava
- V. Smieško et al.: EMC Testing and Consultancy. Contracts for Small and Medium Enterprices.

VI. THESES

VI.1 Masters Theses

The names of supervisors are in brackets:

- Jambor, M.: Wireless telemetry system (M. Bittera)
- Kaplan, N.: Application of Fiber Bragg Gratings in Sensor Systems (J. Červeňová)

- Kolibaš, M.: Multimedia learning materials for online interactive support for teaching electrical engineering courses (E. Ušák)

VII. OTHER ACTIVITIES

Other events:

- Courses for the Accredited Educational Activity "The Electrical Minimum" (M. Bittera, P. Jahn, K. Kováč, V. Olah, Ľ. Šumichrast)

VIII. MEMBERSHIP IN INSTITUTIONS/COMMITTEES

- Member of the Scientific Committee of the Conference "Electrical Engineering and Information Technology" 2015, Trenčín (V. Smieško)
- Chairman of the Council of Universities of Slovak Republic (V. Smieško)
- Member of Slovak Republic Government Council for Science,Technology and Inovation (V. Smieško)
- Member of Scientific Council of the Slovak Academy of Sciences (V. Smieško)
- Member of Scientific Council of Institute of Measurement Science in Slovak Academy of Sciences (V. Smieško)
- 10th International Conference supported by IMEKO TC-7 MEASUREMENT 2015 (Members of the Scientific Committee (V. Smieško, R. Harťanský)
- Member of Scientific Council of the STU (V. Smieško)
- Member of Scientific Council of the FEI STU (V. Smieško)
- Member of Chairmanship of Slovak Research and Development Agency (V. Smieško)
- Member of Accreditation Board for Research Institution in SR (V. Smieško)
- Membership in the Scientific Council of the Slovak Institute of Metrology (V. Smieško)
- Membership in the Slovak National Technical Standardisation Committees (K. Kováč, M. Bittera))
- Membership in the Technical Subcommittees of IMEKO (TC19 - K. Kováč)
- Membership in the Working Group of Accreditation Commission of the Government of Slovak Republic for the research field No. 15 "Electrical Engineering and Electrical Power Engineering (J. Jasenek)
- Membership in the Working Group of Accreditation Commission of the Government of Slovak Republic for the research field No. 17 "Engineering and Technology" (V. Smieško)
- Membership in the Slovak Physical Society (V. Jančárik, J. Sláma, M. Ušáková)
- Membership in the Working Group for the implementation of the National Qualification Framework established by the Ministry of Education of the SR (J. Jasenek)

- Membership in the Life-Long-Learning Managing Committee, established by MS VVS SR (J. Jasenek)
- Membership in Commission for the PhD. Degree Award in the study field Theory of Electrical Engineering (5.2.10) (J. Jasenek, V. Jančárik, J. Bydžovský, J. Sláma, Ľ. Šumichrast, R. Dosoudil, E. Ušák) at FEI STU
- Membership in Commission for the PhD. Degree Award in the study field Theory of Electrical Engineering (5.2.10) (J. Jasenek, V. Jančárik, J. Sláma, E. Ušák) at Faculty of Electrical Engineering, University of Žilina
- Chairman of the Commission for the PhD. Degree Award in the study field Measurement Technology (5.2.54) (V. Smieško)
- Membership in Commission for the PhD. Degree Award in the study field Measurement Technology (5.2.54) (M. Bittera, R. Harťanský, K. Kováč, P. Kukuča, R. Ravas, L. Syrová)
- Membership in Commission for the PhD. Degree Award in the study field Metrology (5.2.55) (V. Smieško, K. Kováč, P. Kukuča, R. Ravas)
- Membership in the Slovak Expertise Commission for Electronics (J. Jasenek)
- Expert No. 256 for Branch of Metrology at the Institute of Normalization, Measurement and Standards (ÚNMS) of Slovak Republic (J. Bydžovský)
- Auditor of Slovak National Accreditation Service (K. Kováč, M. Bittera, J. Hallon)
- Member of the International Program Committee of Magnetic Measurements 2015 (J Bydžovský)
- J. Jančárik: member of the International Program Committee of International Interdisciplinary PhD Workshop I²PhDW'15
- J. Jančárik: member of the International Program Committee of Magnetic Measurements 2015
- J. Sláma: member of the International Program Committee of International Interdisciplinary PhD Workshop I2PhDW'15
- J. Sláma : member of the International Program Committee of Magnetic Measurements 2015 (foundation member)
- E. Ušák: member of the International Program Committee of International Interdisciplinary PhD Workshop I2PhDW'15
- E. Ušák : member of the International Program Committee of Magnetic Measurements 2015.

Membership in the Editorial Boards of Journals:

- Journal of Electrical Engineering (V. Smieško)
- AT&P Journal (V. Smieško)
- EE - Journal of Electrical and Power Engineering (P. Kukuča)
- Measurement Science Review - on-line edition (V. Smieško)
- Radioengineering Journal - rewiever (R. Harťanský)
- Quality Innovation Prosperity - Editorial Advisory Board (R. Harťanský)

VIII.2 Membership in International Institutions/Committees

- J. Bezek:Association for Microwave Power in Europe for Research and Education
- V. Bilík: Association for Microwave Power in Europe for Research and Education
- R. Harťanský: IEEE - The Institute of Electrical and Electronics Engineers
- R. Harťanský: Member of National Committee URSI, Commission A – Electromagnetic Metrology
- V. Jančárik: European Association for Education in Electrical and Information Engineering (EAEEIE)
- J. Jančárik: member of the International Program Committee of International Interdisciplinary PhD Workshop I²PhDW'15
- J. Jančárik: member of the International Program Committee of Magnetic Measurements 2015
- J. Jasenek: European Association for Education in Electrical and Information Engineering (EAEEIE)
- J. Jasenek: IEEE - Institute of Electrical and Electronics Engineers
- J. Jasenek: OSA - Optical Society of America
- J. Jasenek: IOC of the International Travelling Summer School on Microwaves and Lightwaves
- P. Kukuča: IET - The Institution of Engineering and Technology

- J. Sláma: <u>The Institution of Engineering and Technology</u> - IET Slovak Centre
- J. Sláma: SAES, European Physical Society
- J. Sláma: member of the International Program Committee of International Interdisciplinary PhD Workshop I2PhDW'15
- J. Sláma : member of the International Program Committee of Magnetic Measurements 2015 (foundation member)
- V. Smieško: The European Academy of Sciences and Arts
- V. Smieško: IEEE - The Institute of Electrical and Electronics Engineers
- V. Smieško: European Association for Education in Electrical and Information Engineering (EAEEIE)
- V. Smieško: IET - The Institution of Engineering and Technology, Fellow
- V. Smieško: URSI - Scientific Commission for Electromagnetic Noise and Interference
- Ľ. Šumichrast: The Institute of Electrical and Electronics Engineers
- Ľ. Šumichrast: <u>The Institution of Engineering and Technology</u> - IET Slovak Centre
- Ľ. Šumichrast: European Physical Society
- Ľ. Šumichrast: Optical Society of America (OSA)
- Ľ. Šumichrast: President of the Slovak National Committee of the International Union of Radio Science (URSI)
- E. Ušák: member of the International Program Committee of International Interdisciplinary PhD Workshop I2PhDW'15
- E. Ušák : member of the International Program Committee of Magnetic Measurements 2015
- M. Ušáková: European Physical Society.

IX. PUBLICATIONS

Journals

1. CAN, Hava - ŠVEC, Peter, Jr. - TANRISEVEN, Sercan - BYDŽOVSKÝ, Ján - BIRLIKSEVEN, Cengiz - SÖZERI, Hüseyin - ŠVEC, Peter - TOPAL, Ugur. Optimizing the sensing performance of a single-rod fluxgate magnetometer using thin magnetic wires. In *Measurement Science and Technology*. Vol. 26, (2015), Art. no. 115102 [7] p. ISSN 0957-0233. (in English)

2. KORENKO, Branislav - ROTHHARDT, M. - HARTUNG, A. - BARTELT, H. Novel fiber-optic relative humidity sensor with thermal compensation. In *IEEE Sensors Journal*. Vol. 15, No. 10 (2015), p. 5450-5454. ISSN 1530-437X. (in English)

3. KRUŽELÁK, Ján - HUDEC, Ivan - DOSOUDIL, Rastislav - SÝKORA, Richard. Investigation of strontium ferrite activity in different rubber matrices. In *Journal of Elastomers and Plastics*. Vol 47, Iss. 3 (2015), p. 277-290. ISSN 0095-2443. (in English)

4. KRUŽELÁK, Ján - SÝKORA, Richard - DOSOUDIL, Rastislav - HUDEC, Ivan. Influence of peroxide curing systems on the performance of natural rubber-based magnetic composites. In *Composite Interfaces*. Vol. 22, Iss. 6 (2015), p. 473-488. ISSN 0927-6440. (in English)

5. PAVLOVIČ, Márius - MIGLIERINI, Marcel - MUSTAFIN, Edil - ENSINGER, Wolfgang - ŠAGÁTOVÁ, Andrea - ŠOKA, Martin. Radiation damage studies of soft magnetic metallic glasses irradiated with high-energy heavy ions. In *Radiation Effects and Defects in Solids*. Vol. 170, No. 1 (2015), p. 1-6. ISSN 1042-0150. (in English)

6. SÝKORA, Richard - KRUŽELÁK, Ján - HUDEC, Ivan - UŠÁKOVÁ, Mariana - ANNUS, Július - BABAYAN, Vladimír. Elastomer Composites with the Effects of Electromagnetic Shielding. In *KGK-Kautschuk Gummi Kunststoffe*. Vol. 68, Iss. 6 (2015), p. 80-84. ISSN 0948-3276. (in English)

7. ŠOKA, Martin - UŠÁKOVÁ, Mariana - DOSOUDIL, Rastislav - UŠÁK, Elemír - DOBROČKA, Edmund. Magnetic and structural properties of nickel zinc ferrites doped with yttrium. In *IEEE Transactions on Magnetics*. Vol. 51, No. 1 (2015), Art. no. 200504 [4] p. ISSN 0018-9464. (in English)

8. ŠUMICHRAST, Ľubomír. The field of a step-like accelerated point charge: Liénard-wiechert potentials and Čerenkov shock waves revisited. In *Journal of Electrical Engineering*. Vol. 66, No. 6 (2015), p. 317-322. ISSN 1335-3632. (in English)

Conference Proceedings

1. BILÍK, Vladimír. Pragmatic water permittivity model. In *IMPI 49 : Proceedings of 49th Annual microwave power symposium. San Diego, California, USA. June 16-18, 2015*. Mechanicsville : International Microwave Power Institute, 2015, p. 72-73. ISSN 1070-0129. (in English)
2. BITTERA, Mikuláš - MIČIAN, Matej - SMIEŠKO, Viktor. Selection of antenna factor for EMI measurements. In *Measurement 2015 : 10th International conference on measurement. Smolenice, Slovakia, May 25 - 28, 2015*. Bratislava : Slovak academy of sciences, 2015, p. 199-202. ISBN 978-80-969672-9-2. (in English)
3. ČIČÁKOVÁ, Oľga - KRÁLIKOVÁ, Eva. Modeling and simulation in measurement. In *IN-TECH 2015 : Preceedings of the International conference on innovative technologies. Dubrovnik, Croatia. 09.-11.09.2015*. Rijeka : Engineering University of Rijeka, 2015, p. 343-346. ISSN 1849-0662. (in English)
4. DOSOUDIL, Rastislav - UŠÁKOVÁ, Mariana. Magnetic and microwave absorption properties of composites for shielding purposes in vehicles. In *PMA 2015 & SRC 2015, Book of conference proceedings : May 26 -28, 2015, Bratislava*. Bratislava : STU in Bratislava, 2015, p. 175-178. ISBN 978-80-970923-7-5. (in English)
5. HALLON, Jozef - BITTERA, Mikuláš - KOVÁČ, Karol. Effect of test site arrangement for large systems on test validity according to EN 61000-4-3. In *Radioelektronika 2015 : Proceedings of 25th international conference. Pardubice, Czech Republic. April 21-22, 2015*. Pardubice : IEEE, 2015, p. 61-64. ISBN 978-1-4799-8117-5. (in English)
6. HALLON, Jozef - HARŤANSKÝ, René - BITTERA, Mikuláš. Testing of EMC properties of electrical devices equipped with wireless communication. In *Measurement 2015 : 10th International conference on measurement. Smolenice, Slovakia, May 25 - 28, 2015*. Bratislava : Slovak academy of sciences, 2015, p. 249-252. ISBN 978-80-969672-9-2. (in English)
7. HALLON, Jozef - BITTERA, Mikuláš - KOVÁČ, Karol. The shielded chamber interface for EMC tests. In *EMD 2015 : 23th International conference on electromagnetic disturbances. Białystok, Poland. 9 - 11 September 2015*. Białystok : University of Technology, 2015, p. 37-39. ISBN 978-83-62582-76-1. (in English)
8. HARŤANSKÝ, René. Spectrum analysis of the general digital signals. In *EMD 2015 : 23th International conference on electromagnetic disturbances. Białystok, Poland. 9 - 11 September 2015*. Białystok : University of Technology, 2015, p. 44-46. ISBN 978-83-62582-76-1. (in English)
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10. JANČÁRIK, Vladimír - ŠOKA, Martin - UŠÁKOVÁ, Mariana - DOSOUDIL, Rastislav. Magneto-chemical composition and magnetic properties of the selected spinel ferrites. In *Journal of Electrical Engineering*. Vol. 66, No. 7/s (2015), p. 116-119. ISSN 1335-3632. (in English)
11. JASENEK, Jozef - ČERVEŇOVÁ, Jozefa - KORENKO, Branislav. Long bragg grating fibre optic sensors based on OFDR. In *APCOM 2015 : 21st international conference on applied physics of condensed matter. Štrbské Pleso, Slovak Republic. June 24-26, 2015*. Bratislava : Slovak University of Technology Press, 2015, p. 327-332. ISBN 978-80-227-4373-0. (in English)
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13. KORENKO, Branislav - JASENEK, Jozef - ČERVEŇOVÁ, Jozefa. Data processing techniques for fiber bragg grating (FBG) refleectivity characteristics measurements. In *Measurement 2015 : 10th International conference on measurement. Smolenice, Slovakia, May 25 - 28, 2015*. Bratislava : Slovak academy of sciences, 2015, p. 277-280. ISBN 978-80-969672-9-2. (in English)

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15. KRUŽELÁK, Ján - SÝKORA, Richard - DOSOUDIL, Rastislav - HUDEC, Ivan. Sulphur and peroxide cured rubber composites with incorporated magnetic filler. In *PMA 2015 & SRC 2015, Book of conference proceedings : May 26 -28, 2015, Bratislava*. Bratislava : STU in Bratislava, 2015, p. 66-71. ISBN 978-80-970923-7-5. (in English)

16. KRUŽELÁK, Ján - SÝKORA, Richard - DOSOUDIL, Rastislav - HUDEC, Ivan. Rubber magnetic compozites prepared by applying of sulfur and peroxide curing systems. In *IRC 2015 International Rubber Conference, June 29 - July 2, Nuremberg, Germany*. Frankfurt : Deutsche Kautschuk-Gesellschaft, 2015, p. 219. (in English)

17. KRUŽELÁK, Ján - SÝKORA, Richard - DOSOUDIL, Rastislav - HUDEC, Ivan. Sulfur and peroxide cured rubber composites with incorporated magnetic filler. In *PMA 2015 & SRC 2015, Book of conference proceedings : May 26 -28, 2015, Bratislava*. Bratislava : STU in Bratislava, 2015, p. 66-70. ISBN 978-80-970923-7-5. (in English)

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19. MARŠÁLKA, Lukáš - HARŤANSKÝ, René - SMIEŠKO, Viktor. Comprehensive numerical analysis of designed forse sensor based on changes of electromagnetic field properties. In *Measurement 2015 : 10th International conference on measurement. Smolenice, Slovakia, May 25 - 28, 2015*. Bratislava : Slovak academy of sciences, 2015, p. 253-256. ISBN 978-80-969672-9-2. (in English)

20. MARŠÁLKA, Lukáš. The dielectric constant effect to the resonance in electromagnetic field. In *EMD 2015 : 23th International conference on electromagnetic disturbances. Białystok, Poland. 9 - 11 September 2015*. Białystok : University of Technology, 2015, p. 85-88. ISBN 978-83-62582-76-1. (in English)

21. MARŠÁLKA, Lukáš. Non electrical quantities indirect measurement based on changes of electromagnetic field parameters. In *ELOSYS. Elektrotechnika, informatika a telekomunikácie 2015 : Trenčín, Slovakia. 13.–15. October 2015*. Bratislava : STU in Bratislava, 2015, CD-ROM, p. 54-57. ISBN 978-80-227-4437-9. (in Slovak)

22. MIKUŠ, Peter - HARŤANSKÝ, René - SMIEŠKO, Viktor. The theoretical background of design of accredited laboratories for testing of the highfrequency measure. In *ELITECH´15 : 17th Conference of doctoral students. Bratislava, Slovak Republic, May 25, 2015*. Bratislava : STU in Bratislava, 2015, CD-ROM, [4] p. ISBN 978-80-227-4358-7. (in English)

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24. MIKUŠ, Peter - HARŤANSKÝ, René - SMIEŠKO, Viktor. The proposal of the laboratories for radar level gauges calibration. In *EMD 2015 : 23th International conference on electromagnetic disturbances.*

Białystok, Poland. 9 - 11 September 2015. Białystok : University of Technology, 2015, p. 97-100. ISBN 978-83-62582-76-1. (in English)

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26. PAĽA, Jozef - ŠOKA, Martin - UŠÁKOVÁ, Mariana. Effect of rare-earth substitution on magnetic barkhausen noise of nickel zinc ferrites. In *Journal of Electrical Engineering*. Vol. 66, No. 7/s (2015), p. 93-97. ISSN 1335-3632. (in English)

27. SLÁMA, Jozef - ŠOKA, Martin - JANČÁRIK, Vladimír. Metamagnetism in MgMn ferrite : Medium for magnetic cloak and shielding. In *Magnetic Measurements 2015 : Book of Abstracts : International scientific conference. Košice, Slovakia. 25th - 28th August 2015*. Košice : Technical University of Košice, 2015, p. 74. ISBN 978-80-553-2177-6. (in English)

28. SLÁMA, Jozef - ŠOKA, Martin - JANČÁRIK, Vladimír. Metamagnetism in MnMg ferrite: Medium for magnetic cloak and shielding. In *Journal of Electrical Engineering*. Vol. 66, No. 7/s (2015), p. 120-123. ISSN 1335-3632. (in English)

29. SLÍŽIK, Jozef - HARŤANSKÝ, René - SMIEŠKO, Viktor. Creating and measurement of the designed power supply for the near field electromagnetic probe. In *ELITECH´15 : 17th Conference of doctoral students. Bratislava, Slovak Republic, May 25, 2015*. Bratislava : STU in Bratislava, 2015, CD-ROM, [4] p. ISBN 978-80-227-4358-7. (in English)

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31. SLÍŽIK, Jozef - HARŤANSKÝ, René - SMIEŠKO, Viktor - ŠROBA, Lukáš. Measurement of the three vector components of the electric field intensity with proposed electromagnetic field probe measured in the near-field region. In *EMD 2015 : 23th International conference on electromagnetic disturbances. Białystok, Poland. 9 - 11 September 2015*. Białystok : University of Technology, 2015, p. 146-149. ISBN 978-83-62582-76-1. (in English)

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technologies. Yerevan, Armenia. September 28 - October 2, 2015. Danvers : IEEE, 2015, p. 95-99. ISBN 978-1-4673-7562-7. (in English)

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Patents and Standards

1. BOŽEK, Pavol - PIVARČIOVÁ, Elena - TREBUŇA, Peter - HALENÁR, Igor - TÓTHOVÁ, Mária - HARŤANSKÝ, René - PIRNIK, Rastislav - ŠIMÁK, Vojtech. *The Safety improvement patency tunnels: published application of utility model.* Publication date: 2.10.2015. 4 p. (in Slovak)

INSTITUTE OF ELECTRONICS AND PHOTONICS

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GENERAL INFORMATION

The Institute of Electronics and Photonics (IEP/ÚEF in Slovak) provides an education and carries out a research work in a very wide range of micro-/nanoelectronics, photonics and sensorics. Topics from physical principles, technology, materials and structure analysis to system design and applications are covered.

Courses like Materials for Electronics, Electronic Devices, Sensorics, Optoelectronics, Signals and Systems, Electronic Circuits, Microprocessors and Microcomputers as well as Audio and Video Technology are provided for undergraduate students. More specialized courses are offered mainly for 2 MSc study programs called "Radio and Electronic Engineering" and "Microelectronics".

Research and development activity of the Institute staff is oriented as follows:

- Technology and parameters of gas sensors using NiO and TiO2 thin films and nanotips, including growth of a sensitive layer on Si nanotips were analysed and biosensors using Au plasmonic nanoparticle islands on ZnO nanotips were also investigated.

- Research is focused on the synthesis, analysis and applications of carbon nanomaterials. Deposition of intrinsic and boron doped diamond thin films (BDD), DLC layers, carbon nanowalls (CNW), nanotubes (CNT) and graphene is performed by CVD techniques. The synthesized nanomaterials are used for applications in electrochemical analysis and water treatment. The occurrence and concentrations of heavy metals, pesticides, drugs and pharmaceuticals in environment and wastewaters is investigated. The degradation efficiency of these micropollutants by BDD electrodes is studied as well.

- Preparation and analysis of organic layers (e.g. conductive doped PEDOT:PSS, passivation parylen C layers) for organic electronics have been investigated and flexible electrodes for biosignal measurement were verified experimentally. Efficiency of OLED has been increased using photonic crystal based on SiO2 nanoparticles. Complete production line to prepare OLED, OFET and photovoltaic structures has been build up.

- 2D/3D electro-physical modelling and simulation has been used for analysis and optimization of progressive structures and devices, e.g. photovoltaic structures and power devices. New advanced methodology for effective 3D electro-thermal device simulation has been proposed.

- Integrated circuit and systems design and test activities were focused on development and integration of energy efficient circuits for different smart wireless sensors, specifically, for implantable biomonitoring devices and smart wireless metering in households.

- Wireless sensor network for non-invasive in-field EMG and ECG bio-signal measurement synchronized with 10D IMU has been developed and experimentally verified in a number of applications. System is supported by software toolchain for data analysis.

- Progressive solutions of circuits widely used in radio-communication systems, e. g.: local wireless communication networks (WiFi, Bluetooth, ZigBee), cellular communication networks (GSM, UMTS, LTE), software defined radios (SDR), global navigation satellite systems (GPS, Glonass, Galileo), radar systems, RFID, etc. Research is devoted to investigation and to design of novel concepts of signal generators and oscillators with low phase noise, Phase-Locked Loops (PLL), Direct Digital Synthesizers (DDS), secondary frequency standards, etc.

- Research work is concentrated also on image processing: edge detection with sub-pixel accuracy, localization in 3D space based on two cameras.

Cleanrooms ISO5 are equipped with a deposition and etching apparatus and lithography. Material and structure analyses was performed using AES, SIMS, AFM incl. STM, EFM etc., SEM, EBIC, CL, PL, micro-Raman spectroscopy, spectral ellipsometer. Properties and parameters of prepared structures and devices are evaluated using electrical and optical measurement (I-V, C-V, DLTS, microwave and time-resolved measurement, noise analyses while emphasis is put mainly on GaN (HEMT) and SiC structures. EUROPRACTICE membership provides an access to advanced modelling and system design tools as well as to prototyping.

The Institute was involved in 9 EU funded projects (3 FP7, 2 ENIAC JU, 1 COST, 3 HORIZON 2020). Researchers of the Institute have been acknowledged as a "University Top Research Team" (one of two Slovak teams in the area of electrical and electronic engineering) by the Accreditation Commission of the Slovak Republic.

I. STAFF

Professors	Igor Baláž (Prof. emeritus), Juraj Breza, Daniel Donoval, Daniela Ďuračková, Ivan Hotový, Jaroslav Kováč, Florián Makáň (Prof. emeritus), Robert Redhammer, Alexander Šatka, Viera Stopjaková, Vladimír Tvarožek, František Uherek
Associate Professors	Ján Jakabovič, Oldřich Ondráček, Vladimír Štofanik, Ľubica Stuchlíková, Martin Tomáška, Milan žiška
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Researchers	Alena Grmanová, Jozef Mihálov, Ľubomír Sládek, Ján Uhrík
Administrative and Technical Staff	Mária Budejovská, Jozef Ivan, Jozef Král
PhD. Students	Tomáš Bagala, Miroslav Behúl, Marián Bernát, Peter Bobek, Martin Boriš, Šimon Danko, Adam Fibich, Michal Hanic, František Horínek, Juraj Hotový, Pavol Hronec, Martin Jagelka, Juraj Jakuš, Peter Juhász, Lukáš Kohútka, Arpád Kósa, Martin Kováč, Tomáš Kováčik, Peter Kupec, Tomáš Lukáč, Pavol Michniak, Gabriel Nagy, Marián Popovič, Matej Rákus, Ondrej Szábo, Mamadou Abass Seck, Vladinír Sedlák, Robert Szobolovszký, Tomáš Štibraný, Ievgeniia Topolniak, Lucia Válik, Ľubomír Vančo, Peter Vančo

II. EQUIPMENT

II.1 Educational and Research Laboratories

- Cleanrooms ISO5 for Advanced Thin Film Technology (lithography, deposition, plasma etching)
- Laboratory of Scanning Electron Microscopy

- Laboratory of Surface and Thin Film Analysis
- Laboratory of Diagnostics of Compound and Organic Semiconductor Structures
- Technology of Organic Semiconductor Structures
- Laboratory of Diamond Thin Film Synthesis
- Carbon Nanostructure Laboratory
- Laboratory of Raman Spectroscopy
- Laboratory of Integrated Circuits and System-on-chip Design and Test
- Laboratory of Wireless Communication and Navigation
- Semiconductor and Thin Film Device Modelling and Simulation Lab
- SEMITEST – Semiconductor Structure Properties Investigation
- Lab of RF/microwave Measurement, Modelling and Design
- Laboratory of Sensor and Microsystem Technology
- Echoic Acoustical Chamber
- Laboratory of Analog Circuits and Systems and Navigation (education)
- Laboratory of Radiocommunication Systems (education)
- Laboratory of Biomedical Engineering (education)
- Laboratory of Signals and Systems (education)
- Laboratory of Antennas and Wave Propagation (education)
- Laboratory of Audio Engineering and Electroacoustics (education)
- Laboratory of Video Engineering (education)
- Laboratory of Analog and Digital Circuits (education)
- Prototyping laboratory of Electronic Systems
- Electronic Systems Prototyping Room with CNC 3D Axis Machine and Manually Operated Lathe
- Laboratory of Integrated Circuits and Semiconductor Structures Design (education)
- Laboratory of Optical Measurements
- Laboratory of Radio Communication Technology (education)
- Lighting Control Lab Using Advanced Light Sources Supported by OMS Ltd.
- Laboratory of Signal Processing and Biomedical Applications (education)

II.2 Special Equipment, Instruments, and Tools

- Symmetricom TSC5115 - Phase Noise Test Set
- Symmetricom CSAC - SA.45s - Cesium atomic frequency source (Chip Scale Atomic Clock)
- Pendulum GPS12R - rubidium atomic standard disciplined by GPS (Pendulum – GPS 12R)
- Pendulum CNT-91 - timer, counter, analyzer + software
- System One by Audio Precision - audio measurement system
- Mixing consoles: Tesla ESR2808, Yamaha O2R, Audioarts RD-20, Digital sound processor Multiverb Alpha 2.0 by Applied Research and Technology
- Professional equipment by Brüel&Kjær – microphones, accelerometers, calibrators, level recorder, vibration exciters
- Experimental setup for on-chip electrical measurements (Digital Serial Analyser DSA8200 with TDR Module, 4-channel Digital Oscilloscope DS6104, 2-channel Function/Arbitrary Waveform Generator DG1062, Tektronix Data Timing Generator DTG 5334)
- Experimental System for Low-Frequency Noise Measurements (Analyzer Agilent Technologies MXA N9020A, Low frequency SR770 Network Ananlyser)
- Computer Controlled System for I-V and C-V Measurements and Analysis (from RT to 800 K)
- Hall and four point probe setup, DSLab.Ltd.
- Photovoltaic Cell Testing Light Source Model 16S-002 300 W, Solar Light Company, Inc.
- Six-Port Reflectometers and Automatic Impedance Matching System for High-power Industrial Applications
- Precise Registration / Calibration Electricity Meter
- Precise Digital Network Analyser and Standard Meter PEM 6711
- DL8000 Digital Deep Level Transient Spectrometer, BIO-RAD system

- LCR meter GW instek LCR-816 with Kelvin probe
- Lock-in amplifier Stanford SR830 - Function Generator GW Instek GFG-2015
- Pick and place SMD machine, Reflow owen
- Microwave Network Analyser HP 8408 S + HP83421A Lightwave Source (20 GHz)
- Microwave Network Analyzer (40 GHz) Agilent E8363 B (temperature range: RT – 400K) - RFOW measurements
- Semiconductor Parameter Analyzer, Agilent 4155C
- Semiconductor Parameter Analyzer, Keysight Technologies B1500A
- Arbitrary Function Generator TEKTRONIX AFG3252 (240 MHz, 2 channel)
- Digital Oscilloscope TEKTRONIX TDS20225
- Digital Oscilloscope TEKTRONIX DPO4104B (1GHz, 4 channel)
- Spectrum analyzer Rohde&Schwarz FSV7
- DSA 8200 Digital Serial Analyser - Sampling Oscilloscope with TDR Module
- Digital Pulse Generator DTG5334
- Manual probing station for electrical (DC and HF) measurements on wafers up to 150 mm – Süss PM5, SÜSS MicroTec AG.
- Experimental System for Low-Frequency Noise Measurement
- Micromanipulators with Nanotips for Measurement and Testing of Electronic Devices, and Manipulation of Micro-/nano-objects
- Atomic Force Microscope, Park XE-100
- SEM Cold Cathode Microscope JEOL JSM 7500
- Raman Spectrometer (ISA-Jobin Yvon-Dilor-Horiba)
- X-ray Photoelectron Spectrometer (VG Microtech)
- Spectroscopic Ellipsometer Angstrom Advanced PHE 102
- Surface Profiler Dektak 150 (Veeco)
- Mask aligner for optical contact photolitography (Band spectrum: 240 nm ÷ 450 nm, wafers up to 150 mm) and Nano- Imprint Lithography (UV-NIL Module, Imprint area 1" x 1"), Top and Bottom Side Alignment – Süss MA/BA 6, SÜSS MicroTec AG.
- Mask aligner for broad-band and i-line optical contact photolitography on wafers up to 4" – Süss KSM MJB 3HP
- Organic materials thin film deposition system with Glovebox – SPECTROS 100, Kurt J. Lesker Company (Glovebox: Vigor Sci-Lab SG1200/750TS)
- Thin Film Deposition System – PVD75, Kurt J. Lesker Company
- Compact Plasma System – PECVD, Plasmalab 80Plus, Oxford Instruments Plasma Technology
- Modular Cluster System – RIE, PlasmalabSystem 100, Oxford Instruments Plasma Technology
- RF RIE etching system Plasma PE 200
- Ozone/UV Cleaner SAMCO UV-2
- Sputter Etcher XNE-01 (Secon)
- Sputtering Unit Perkin-Elmer Ultek/Randex 2400/8L
- The Dicing Saw ADT 7100
- Adhesive Die Bonder Cammax DB 600
- Manual Ball Bonder K&S 4700
- RTA - Rapid Thermal Annealing (home-made)
- Equipment for Emission Measurements (home-made)
- AUTOLAB PGSTAT128N with automatic Dosino system
- Linear antenna microwave CVD reactor, low temp large area (20x30 cm) deposition (Scia systems)
- Hot Filament CVD diamond reactor (home-made)
- Microwave/Hot Filament CVD diamond reactor (home-made)
- Arc Discharge Reactor for CNT Growth (home-made)
- CVD Reactor for CNT Growth (home-made)
- Evaporation equipment for thin film deposition (home-made)
- Contact Angle Measurement System (home-made)
- Helium leak detector HLT570 (Pfeiffer vacuum)
- VisualDSP++ SHARC Processor Development Tools, ADSP-21364 and ADSP-TS201S Evaluation Kits, Analog Devices donation

- MC9S08LC60/36 Demonstration Board + complete CodeWarrior Development Studio for HC08 and HC12, FreeScale donation
- Sonnet – Planar Structures Electromagnetic Simulator (University licence)
- CST - 3D Structure Electromagnetic Simulator (University licence)
- Advanced Design System Keysight Technologies (University licence)
- IC-CAP, Keysight Technologies (University licence)
- **EDA Tools via EUROPRACTICE**
- Synopsys TCAD Sentaurus A_2007.12
- Synopsys Analog Simulation and Modelling (HSpice)
- Cadence IC Package
- Dolphin Integration Smash HDL & SLED
- **Design Kits:**
- AMS 0.35 μm
- ONSEMI I3T50 - 0.35 μm
- UMC 130 nm
- TSMC 90 nm

III. TEACHING

Courses provided by the Institute staff

III.1 Undergraduate Study (BSc)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Study Program "Electronics"

Logic Systems	(1st sem., 3-1h)	V. Stopjaková
Microcomputers and its Programming	(3rd sem., 2-2h)	M. Daříček
Electronic Devices and Circuits	(3rd sem., 2-2h)	Ľ. Stuchlíková, R. Redhammer
Materials for Electronics	(3rd sem., 2-2h)	D. Donoval
Optoelectronics and Laser Technique	(4th sem., 2-2h)	F. Uherek
Electronic Devices and Circuits	(4th sem., 3-2h)	Z. Krajčušková
Digital Circuits	(4th sem., 2-2h)	M. Hagara
Signals and Systems	(4th sem., 3-2h)	O. Ondráček
Optoelectronics	(5th sem., 2-2h)	F. Uherek
Microelectronics	(5th sem., 2-2h)	D. Donoval
Sensorics	(5th sem., 2-2h)	I. Hotový
Digital and Pulse Circuits	(5th sem., 2-2h)	M. Hagara, M. Daříček
Bachelor Project 1	(5th sem., 0-2h)	D. Donoval
Principles of IC Design	(6th sem., 2-2h)	D. Ďuračková
Digital and Pulse Circuits	(6th sem., 3-2h)	M. Hagara, M. Daříček
Programmable Digital Circuits	(6th sem., 2-2h)	V. Stopjaková
Sensorics	(6th sem., 2-2h)	V. Tvarožek
Audio and Video Technology	(6th sem., 2-2h)	P. Kubinec, M. Hagara
Microprocessor Technique	(6th sem., 2-2h)	P. Kubinec
Bachelor Project 2	(6th sem., 0-8h)	F. Uherek, O. Ondráček

Study Program "Applied Informatics"

Logic Systems	(1st sem., 3-1h)	V. Stopjaková
Quality Management	(2nd sem., 1-2h)	M. Žiška
Microcomputers and its Programming	(3rd sem., 2-2h)	P. Kubinec
Electronic Systems	(3rd sem., 3-2h)	M. Žiška

Study Program "Applied Mechatronics"

Signals and Systems	(4th sem., 3-2h)	O. Ondráček
Optoelectronics and Laser Technique	(4th sem., 2-2h)	F. Uherek
Quality Management	(4th sem., 2-1h)	M. Žiška
Electronic Devices	(4th sem., 2-2h)	Ľ. Stuchlíková

Study Program "Robotics"

Logic Systems	(1st sem., 3-1h)	V. Stopjaková

Study Program "Telecommunications"

Microcomputers and its Programming	(3rd sem., 2-2h)	M. Daříček
Electronic Devices and Circuits	(3rd sem., 2-2h)	Ľ. Stuchlíková, R. Redhammer

III.2 Graduate Study (MSc)

Study Program "Microelectronics"

Scientific Communication	(2nd sem., 1-0h)	F. Uherek, D. Donoval, J. Breza
Diploma Project 1	(2nd sem., 0-6h)	D. Donoval
Computer Aided IC Design	(2nd sem., 3-2h)	V. Stopjaková
Applied Optoelectronics and Lasers	(2nd sem., 3-2h)	J. Kováč, F. Uherek
Nanoelectronics	(2nd sem., 3-2h)	R. Redhammer
Industrial Electronics	(2nd sem., 3-2h)	A. Šatka
Optical Communication Systems	(2nd sem., 2-1h)	F. Uherek
Physical Electronics of Solids 2	(2nd sem., 2-1h)	M. Veselý
Superconductor Electronics	(2nd sem., 2-1h)	J. Breza
Microsystem Technology	(2nd sem., 2-1h)	I. Hotový
RF Circuit Design	(4th sem., 2-1h)	M. Tomáška
Diploma Project 3	(4th sem., 0-8h)	D. Donoval

Study Program "Radio and Electronic Engineering"

Radiocommunication	(2nd sem., 3-2h)	V. Štofanik
Antennas and Radiocommunication Routes	(2nd sem., 3-2h)	V. Štofanik
Applied Electroacoustics	(2nd sem., 3-2h)	A. Přibilová
Telemedicine Engineering	(2nd sem., 3-2h)	Z. Krajčušková
Biosignals and Biosystems Analysis	(2nd sem., 3-2h)	J. Púčik

Diploma Project 1	(2nd sem., 0-6h)	O. Ondráček
Diploma Project 3	(4th sem., 0-8h)	O. Ondráček

Study Program "Electronics and Photonics"

Digital Signal Processing	(1st sem., 2-2h)	O. Ondráček
CAE of Electrical Devices	(1st sem., 2-2h)	D. Donoval
Computer Circuit Analysis	(1st sem., 2-2h)	M. Tomáška
Team Project	(1st sem., 0-3h)	D. Donoval
Photonics	(3rd sem., 2-2h)	J. Kováč
Methods of Material and Structure Analysis	(3rd sem., 2-2h)	J. Breza
Nanoelectronics and Superconductor Electronics	(3rd sem., 2-2h)	J. Breza
Sensor Microsystems	(3rd sem., 2-2h)	I. Hotový
Multimedia Engineering	(3rd sem., 2-2h)	A. Přibilová, M. Hagara
Optical Communication Systems	(3rd sem., 2-2h)	F. Uherek
Radiocommunication Systems and Routes	(3rd sem., 2-2h)	V. Štofanik
Telemedicine Engineering	(3rd sem., 2-2h)	J. Púčik, E. Cocherová, E. Vavrinský
Diploma Project 2	(3rd sem., 0-2h)	D. Donoval

Study Program "Applied Mechatronics"

Laser Systems for Mechatronics	(1st sem., 2-2h)	F. Uherek
Industrial Electronics	(2nd sem., 3-2h)	A. Šatka
Nanoelectronics	(2nd sem., 2-2h)	R. Redhammer
Programmable IC	(2nd sem., 2-2h)	J. Jakabovič

III.4 Distance Study

Electronic System	(4th sem.)	Ľ. Stuchlíková

III.5 Undergraduate Study for Foreign Students (in English Language), Erasmus

Telemedicine Engineering	J. Púčik, E. Cocherová

IV. RESEARCH PROJECTS

IV.1 International Cooperation Projects

Projects within EU Funded Programmes (FP7, ENIAC JU, COST and HORIZON 2020)

- **PowerBase** – "Enhanced substrates and GaN pilotlines enabling advanced compact power applications" Horizon 2020/ECSEL No. 662133 (05/2015 – 04/2018). Coordinator: INFINEON TECHNOLOGIES AG, Austria, local project manager: A. Šatka

- **INREP** – "Towards Indium free TCOs" H2020-EU.3.5.3, No. 641864 (02/2015 - 02/2018). Coordinator: University of Bath, UK, local project manager: A. Šatka
- **OSIRIS** – "Optimal SIC substRates for Integrated Microwave and Power CircuitS" H2020/ECSEL No. 662322 (05/2015 - 04/2018). Coordinator: III V LAB, France, local project manager: J. Kováč
- **eRamp - "**Excellence in Speed and Reliability for More than Moore Technologies" ENIAC JU No. 621270 (2014 - 2017). Coordinator: INFINEON TECHNOLOGIES DRESDEN GMBH, Germany, local project manager: D. Donoval
- **SAFESENS** – "Sensor Technologies for Enhanced Safety and Security of Buildings and its Occupants", ENIAC JU No. 621272 (2014 - 2017). Coordinator: Dr. Romano Hoofmann, NXP Semiconductrors NV, Belgium, local project manager: I. Hotový
- **ALBATROSS** – "Assembling Langmuir-Blodgett Architectures Through the Use of Roll-to-roll Systems", FP7-PEOPLE-2012-IAPP, No. 324449 (2013 – 2017). Coordinator: University College Cork (Tyndal Centre), Ireland, local project manager: M. Weis
- "De-identification for privacy protection in multimedia content", COST No. IC 1206 (2013 - 2017). Local project manager: A. Přibilová
- **E2COGaN** – "Energy Efficient Converters Using GaN Power Devices", ENIAC JU No. 324280 (2013 – 2016). Coordinator: ON Semiconductor, Belgium, local project manager: D. Donoval,
- **E2SG** – "Energy to Smart Grid", ENIAC JU No. 296131-2 (2012 - 2015). Coordinator: INFINEON, Germany, local project manager: V. Stopjaková

IV.2 National Projects

IV.2.1 Projects supported by the Research & Development Operational Programme funded by the ERDF

National Competence Centre

- **INTELINSYS** – Competence Centre for Smart Technologies towards Electronization and Informatization of Systems and Services, ERDF, ITMS 26240220072 (2011-2015). Coordinator: D. Donoval

IV.2.2 National R&D Projects funded by the Ministry of Education (VEGA, KEGA) and Development and Research Agency (APVV) Actions

- Investigation of advanced materials and structures for photoelectrochemical applications. No. VEGA 1/0651/16 (2016-2019). Coordinator: M. Mikolášek
- Analysis and characterization of advanced power electronic devices supported by 2/3D electrothermal modeling and simulation. No. VEGA 1/0491/15 (2015-2018). Coordinator: D. Donoval
- Flexible organic semiconductor devices characterization and technology development, No. VEGA 1/0497/15 (2015-2018). Coordinator: J. Jakabovič
- Transient methods for organic electronics devices characterization, No. VEGA 1/0776/15 (2015-2018). Coordinator: M. Weis
- Universal nanowire platform for interdisiplinary applications. No. APVV-14-0297 (2015-2018). Coordinator: J. Novák, EI SAS Bratislava, local coordinator: J. Kováč
- Interactive forms of support of the technical education in primary and secondary schools, No. KEGA 020STU-4/2015 (2015-2017). Coordinator. Ľ. Stuchlíková
- Cognitive, personal and psychophysiological factors of the stress in the context of the relationship between anxiety and allergies and their optimization, No. APVV-0496-12 (2013-2017). Coordinator: E. Vavrinský
- Innovation of education in current and interdisciplinary aspects of mulimedia technology, No. KEGA 022STU-4/2014 (2014-2016). Coordinator: J. Púčik
- Scanning charge transient microscope to visualize and analyze soft samples, No. VEGA 2/0099/14 (2014-2016). Coordinator: P. Kubinec

- Multimode piesoelectric resonators and sensors, No. VEGA 1/0664/14 (2014-2017). Coordinator: V. Štofanik
- Research of carbon based nanomaterials to protect and improve environment and human health, No. VEGA 1/0785/14 (2014-2016). Coordinator: M. Vojs
- Carbon nanomaterials for sensoric applications. No. APVV-0365-12 (2013-2016). Coordinator: M. Vojs
- Implementation of on-chip test methods for mixed-signal integrated circuits and systems in nanotechnologies, No. VEGA 1/0823/13 (2013-2016). Coordinator: V. Stopjaková
- Carbon based nanocomposites and nanostructures for special applications, VEGA 1/0601/13 (2013-2015). Coordinator: M. Kadlečíková
- Development and chartcterization of advanced heterostructures and nanostructures for solar cells, VEGA 1/0439/13 (2013-2015). Coordinator: J. Kováč
- Monitoring and analysis of psychophysiological correlates, as indicators of emotional states and personality variables. No. VEGA 1/1110/12 (2012-2015). Coordinator: I. Brezina, Comenius Universitym Local coordinator: E.Vavrinský
- Photonic structures for integrated optoelectronics. No. APVV-0395-12 (2013-2016). Coordinator: F. Uherek
- Preparation and diagnostics of heterostructures for advanced photovoltaic applications. No. VEGA 1/0377/13 (2013-2016). Coordinator: L. Harmatha
- Smart sensor systems based on organic electronics for health monitoring and improvement of life quality. No. APVV-0819-12 (2013-2016). Coordinator: M. Weis
- Special methods for characterization and diagnostics of advanced semiconductor micro/nanostructures and devices. No. VEGA 1/0921/13 (2013-2016). Coordinator: A. Šatka
- Transistors on the base of progressive materials for high temperatures. No. APVV-0455-12 (2013-2016). Coordinator: M. Vojs
- Design Optimization of Low-power Digital and Mixed Integrated Systems. No. VEGA 1/1008/12 (2012-2015). Coordinator: E. Gramatová, FIIT STU, local coordinator: V. Stopjaková
- Monolithic Integration of Depletion- and Enhancement-mode InAlN/GaN HFET Transistors. No. APVV 0367-11(2012-2015). Coordinator: A. Šatka
- Innovative and Energetic Effective Organic LED Structures Integrable in Illuminating Applications and Low Resolution Displays. No. APVV 0865-11 (2012-2015). Coordinator: D. Donoval
- Novel Trends in Preparation of Ohmic Contacts to p-GaN. No. VEGA 1/1197/12 (2012-2015). Coordinator: J. Liday
- High Temperature Microwave Characterization of Advanced Semiconductor Devices. No. VEGA 1/0839/12 (2012-2015). Coordinator: M. Tomáška
- Modelling and Diagnostics of Quantum-coupled Structures. No. VEGA 1/0712/12 (2012-2015). Coordinator: J. Racko
- New Design Approaches for VLSI Implementations of Neurochips and their Use for Signal Processing in Bioapplications and Neuroimplants. No. VEGA 1/0987/12 (2012-2015). Coordinator. D. Ďuračková
- MEMS Sensors Based on Nanostructured Thin Films for Gas Detection and Determination of Heavy Metals. No. VEGA 1/1106/12 (2012-2015). Coordinator: I. Hotový
- Nanostructured Thin Films and Interfaces for Photovoltaic Cells and Microsensors. No. VEGA 1/0459/12 (2012-2015). Coordinator: V. Tvarožek

IV.2.3 Projects funded by the Slovak University of Technology (Young Researchers Support Programme)

- Charge Transport Study of Organic Light-Emitting Diodes. OLED. Responsible: P. Juhasz
- Development of boron doped diamond thin films for wastewaters treatment, BDD-ČOV. Coordinator: M. Behúl

V. COOPERATION

V.1 Bilateral projects

Bilateral Cooperation with Eberhard Karls Universität, Tübingen, Germany

- DAAD – "Plasmonic nanoparticle layers for optoelectronic applications". (02/2015-12/2016). Local representative: J. Jakabovič

Bilateral Research Cooperation Czech Republic – Slovakia

- Aspects and factors affecting a low interest to study technology, No. SK-CZ-2013-0174 (2015). Local representative: Ľ. Stuchlíková
- Hybrid heterostructures based on diamond and ZnO to be used in electronics and photovoltaics, No. SK-CZ-2013-0043. Local representative: M. Marton

V.2 International Cooperation

- III-V LAB, France
- **City University of Hong Kong, Hong Kong, China**
- Czech Technical University, Prague, Czech Republic
- Eberhard Karls Universität, Tübingen, Germany
- Faculty of Microsystem Electronics and Photonics, Wroclaw University of Technology, Poland
- Ilmenau University of Technology, Ilmenau, Germany
- imec vzw., Leuven, Belgium
- Infineon Technologies, Austria
- Infineon Technologies, Germany
- Institute of Photonics and Electronics of the Czech Academy of Sciences,Prague, Czech Republic
- Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic
- Institute of Physics, Tokio, Japan
- Institute of Solid State Physics, Technical University Graz, Graz, Austria
- Johannes Kepler Universität Linz, Linz, Austria
- Lanzhou University, Lanzhou, China
- Masaryk University, Brno, Czech Republic
- NXP Semiconductrors NV, Belgium
- ON Semiconductor, Belgium
- ON Semiconductor – Roznov Development Center and Manufacturing Facility, Rožnov p. R., Czech Republic
- STMicroelectronics, Italy
- Technical University of Brno, Department of Microelectronics, Czech Republic
- TU Pardubice, Czech Republic
- University of Bath, United Kingdom
- University College Cork (Tyndal Centre), Cork, Ireland
- VŠB – Technical University of Ostrava, Ostrava, Czech Republic
- West Bohemian University, New Technology Center, Pilsen, Czech Republic

V.3 Cooperation in Slovakia

- Analog Devices, Bratislava
- Applied Precision, Bratislava
- ARETA PRO Ltd., Bratislava
- Comenius University, Bratislava
  Faculty of Medicine
  Faculty of Natural Sciences
  Faculty of Psychology

- Council for Broadcasting and Retransmission
- Danubia NanoTech Ltd., Bratislava
- International Laser Centre, Bratislava
- Logomotion Ltd., Piešťany
- LOX Technologies, Piešťany
- MIRONIX Bratislava
- NanoDesign Ltd., Bratislava
- OMS Ltd., Dojč
- ON Semiconductor, Bratislava Development Center (BDC), Bratislava
- POWERTEC Ltd., Bratislava
- R-DAS Ltd., Žilina
- Slovak Academy of Sciences in Bratislava
    - Institute of Electrical Engineering
    - Institute of Informatics
    - Institute of Measurement Science
    - Institute of Physics
    - Slovak Office of Standards, Metrology and Testing
    - University Hospital, Bratislava - Prof. Dérer Hospital & Ružinov Hospital, Bratislava
    - University of Technology, Košice
    - University of Žilina, Žilina

VI. THESES

VI.1 Master Theses

Master theses supervised at the Institute of Electronics and Photonics. Name of supervisor is in brackets.

- Bagala T.: RGB laser projector (M. Hagara)
- Bečker J.: Security system based on gas sensors (I. Košč)
- Danko Š.: Analysis of digital filters for inertial measurement unit (F. Hořínek)
- Fibich A.: Analog synthesizer of music signals (P. Kubinec)
- Heleši K.. Measurement and analysis of brain responses to sensory stimulation (J. Púčik)
- Jambor M.: Wireless telemetry system (M. Bittera)
- Kosnáč D. Characterization of structures for new memory elements operating on resistive switching principle (L. Harmatha)
- Maco M.: 3D TV – conversion of 2D to 3D images (M. Hagara)
- Palko J.: Sensitive layer for gas sensor in security technology (I. Košč)
- Rakús M.: Construction and characterization of the Tesla coil (J. Kováč jr.)
- Reháček T.: Spectral methods of noise suppression of MR tomograph in recording speech signal (A. Přibilová)
- Rystvej M.: Sound effect with frequency-controlled amplification (P. Kubinec)
- Sandánus M.: Characterization of LED and photodiodes with photonic structure optical spectroscopic methods (J. Kováč jr.)
- Schlosser F.: Analysis of sound equipment frequency characteristics by the PC (P. Kubinec)
- Solčiansky M.: Electrical characterization of AIIIBV semiconductor structures (P. Benko)
- Szobolovszký R.: Automatisation of the spectral measurement workplace in Labview development enviroment (J. Kováč jr.)
- Válik Lucia: IMU sensor unit (M. Daříček)
- Válik Lukáš: Characterization of GaN based MOS heterostructures for safe enhanced mode transistors (L. Harmatha)
- Zajac M.: Electronic temperature sensing unit from system of TMP05 sensors with wireless data transmission (V. Štofanik)

VI.2 Doctoral Theses

The name of supervisor is in brackets.

- Vereš Benkovská J.: Electrical characterization of structures based on progressive materials
  (Ľ. Stuchlíková)
- Vančo Ľ. Selected problems of surface enhanced Raman spectroscopy (M. Kadlečíková)
- Mamadou Seck - Compining surface and vertical profile-studies of organic materials in solar cells
  (F. Uherek)
- Ievgeniia Topolniak - Photodegradation of polymer nanocomposites for encapsulation of organic solar
  cells (F. Uherek)

VII. OTHER ACTIVITIES

VII.1 Conferences and events organised by the Institute staff

The Institute was an organizer/co-organizer of:

- **WOCSDICE 2015**, The 39th Workshop on Compound Semiconductor Devices and Integrated Circuits,
  Smolenice, Slovakia. 8-10 June, 2015, Organized by Institute of Electronics and Photonics, FEI STU,
  Organizers: D. Donoval, P. Benko, M. Budejovská, P. Kordoš, F. Uherek, E. Vavrinský
- **ADEPT 2015,** The 3rd International Conference on Advances in Electronic and Photonic Technologies,
  Štrbské Pleso - High Tatras, Slovakia, June 1 - 4, 2015. Organized by TU Žilina, Co-organizer: J. Kováč, Jr.

VIII. MEMBERSHIP IN INSTITUTIONS AND COMMITTEES

VIII.1 Membership in International Institutions/Committees/Boards

- Audio Engineering Society, member and the contact person of the Slovak section (A. Přibilová)
- Czech and Slovak Radioengineering Society, Member (E. Cocherová)
- IEEE Communications Society, Member (V. Štofanik)
- IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, Member (V. Štofanik)
- IEEE, Engineering in Medicine and Biology (EMB) Society Chapter, Local Chapter Chair (E. Cocherová)
- IEEE, Member of Executive Committee of the Czechoslovakia Section (E. Cocherová)
- IEEE, The Institute of Electrical and Electronic Engineers, Member (E. Cocherová , D. Donoval, V. Štofanik,
  V. Stopjaková)
- IEEE Signal Processing Society, Member (M. Hagara)
- IEEE, Circuits and Systems, Communications Societies and Signal Processing Societies Joint Chapter
  (CAS/COM/SP), vice-chair (M. Hagara)
- IFMBE, The International Federation for Medical and Biological Engineering (E. Cocherová, Z.
  Krajčušková, O. Ondráček)
- Member of Education and Training Coordination Board and Scientific Community Council of ENIAC JU (D.
  Donoval)
- Member of Steering Committee of European Workshop in Microelectronics Education EWME (D.
  Donoval)
- Member of the Programme Committee of the International Conference Distance Learning, Simulation
  and Communication 'DLSC 2015' (Ľ. Stuchlíková)
- Member of the Programme Committee of the International Conference on Emerging eLearning
  Technologies and Applications 'ICETA 2015' (Ľ. Stuchlíková)
- Member of Technical Programme Committee of the 14th Conference on Microwave Techniques COMITE
  2015 (E. Cocherová)

- Member of the Programme Committee and the Organizing Committee of the Conference Radioelektronika 2015 (Z. Krajčušková)
- Members of the Programme Committee of the ADEPT 2015 Conference (J. Kováč, **D. Donoval, A. Šatka, V. Stopjaková, F. Uherek**)
- Members of the Programme Committee of the Optical Communication - OK2015 Conference (J. Kováč, F. Uherek)
- Czech and Slovak Radioengineering Society, Member, Member of Board of Directors (Z. Krajčušková)
- Member of the International Advisory Committee of European Conference on Organised Films (ECOF 14) (M. Weis)
- Representative of the Slovak Vacuum Society in the International Union for Vacuum Science, Technique and Application (IUVSTA), Electronic Materials and Processing Division (J. Kováč)
- Representative of the Slovak Vacuum Society in the International Union for Vacuum Science, Technique and Application (IUVSTA), Surface Engineering Division (M. Weis)
- Steering Committee Chair of IEEE Symposium on Design and Diagnostic of Electronic Circuits and Systems, DDECS (V. Stopjaková)
- URSI (Union Radio-Scientifique Internationale), president of National Committee in Slovak Republic (V. Štofanik)
- URSI, Scientific Secretary, National Committee in Slovak Republic (Z. Krajčušková)

VIII.2 Awards and Membership in National Committees/Boards

VIII.2.1 Awards

- The Institute has been acknowledged as a "University Top Research Team" (one of two Slovak teams in the area of electrical and electronic engineering) by the Accreditation Commission of the Slovak Republic
- A. Kuzma was awarded a title "Designer of the Year 2015" by the Union of Electrical and Electronic Industry of the Slovak Republic

VIII.2.2 Membership in National Committees/Boards

- Chairman of the Board No. 5 of the Scientific Grant Agency of the Ministry of Education, Science, Research and Sport (D. Donoval)
- Member of the Scientific Committee of the Institute of Electrical Engineering of the Slovak Academy of Sciences (J. Kováč)
- Member of the Slovak Research and Development Agency (APVV) Board, Working Group of Technical Sciences, Electrical Engineering and Information Technology (J. Kováč)
- Member of the Slovak Research and Development Agency (APVV) Board to Support Establishment and Activities of the Centres of Excellence in Research and Education (J. Kováč)
- SBIMI, Society for Biomedical Engineering and Medical Informatics, Member of Committee (E. Cocherová)
- SKBS, Slovak Biophysical Society, Member (E. Cocherová)- SBIMI SLS, Society for Biomedical Engineering and Medical Informatics, Member of Committee (Z. Krajčušková)
- SBIMI SLS, Society for Biomedical Engineering and Medical Informatics, Section of Medical Informatics, Scientific Secretary (Z. Krajčušková)
- Association of Alumni and Friends, Faculty of Electrical Engineering and Information Technology in Bratislava, member of Bureau (Z. Krajčušková)

IX. PUBLICATIONS

Parts of Books

1. PŘIBIL, Jiří - PŘIBILOVÁ, Anna. Determination of propagation time delay between the signals of vibration and noise in the open-air magnetic resonance imager. In *Noise and Vibration in Practice : peer-reviewed scientific proceedings. Vol. 20.* Bratislava : Slovak University of Technology, 2015, p. 61-66. ISBN 978-80-227-4364-8. (in English)
2. STUCHLÍKOVÁ, Ľubica. Mysterious world of science and technology. In *Ako popularizovať vedu*. Martin : Matica slovenská, 2015, p. 29-46. ISBN 978-80-8115-214-6. (in Slovak)
3. VAVRINSKÝ, Erik - DAŘÍČEK, Martin - HORÍNEK, František - DONOVAL, Martin - MIKLOVIČ, Peter. Simultaneous measurement of EMG, MMG and EIM via wireless holter. In *Spektrum informačných zdrojov z biomedicínskeho prostredia & výmena teoretických a klinických poznatkov*. Prague : Evropská asociace pro fototerapii, 2015, S. 179-185. ISBN 978-80-87861-11-0. (in Slovak)

Journals

1. ARBET, Daniel - STOPJAKOVÁ, Viera - KOVÁČ, Martin - NAGY, Lukáš - NAGY, Gabriel. Design of cmos readout frontend circuit for mems capacitive microphones. In *Facta Universitatis*. Vol. 28, No. 2 (2015), p. 263-274. ISSN 0353-3670. (in English)
2. ARBET, Daniel - STOPJAKOVÁ, Viera - KOVÁČ, Martin. Investigation of the optimum oscillation frequency value towards increasing the efficiency of OBIST approach. In *Microelectronics Reliability*. Vol. 55, (2015), p. 1120-1125. ISSN 0026-2714. (in English)
3. BUJŇÁKOVÁ, Zdenka - BALÁŽ, Peter - ČAPLOVIČOVÁ, Mária - ČAPLOVIČ, Ľubomír - KOVÁČ, Jaroslav Jr. - ZORKOVSKÁ, Anna. Mechanochemical synthesis of InAs nanocrystals. In *Materials Letters*. Vol. 159, (2015), p. 474-477. ISSN 0167-577X. (in English)
4. BUTVINOVÁ, Beata - BUTVIN, Pavol - KUZMINSKI, Marek - SLAWSKA-WANIEWSKA, A. - MAŤKO, Igor - ŠVEC, Peter - ŠVEC, Peter, Jr. - KADLEČÍKOVÁ, Magdaléna - HUBEŇÁK, Michal - JANIČKOVIČ, Dušan. Effects of grain growth blocking in annealed metalloid-poor Fe-M-Cu-B-Si ribbons (M = Nb, Mo, V). In *Journal of Alloys and Compounds*. Vol. 648, (2015), p. 527-533. ISSN 0925-8388. (in English)
5. CINDRIC, Marija - VOJS, Marian - MATYSIK, Frank-Michael. Characterization of the oxidative behavior of cyclic nucleotides using electrochemistry–mass spectrometry. In *Electroanalysis*. Vol. 27, No. 1 (2015), p. 234-241. ISSN 1040-0397. (in English)
6. CINKOVÁ, Kristína - ZBOJEKOVÁ, Natália - VOJS, Marian - MARTON, Marián - SAMPHAO, Anchalee - ŠVORC, Ľubomír. Electroanalytical application of a boron-doped diamond electrode for sensitive voltammetric determination of theophylline in pharmaceutical dosages and human urine. In *Analytical Methods*. Vol. 7, Iss. 16 (2015), p. 6755-6763. ISSN 1759-9660. (in English)
7. CINKOVÁ, Kristína - DIANOVÁ, Linda - VOJS, Marian - MARTON, Marián - ŠVORC, Ľubomír. Rapid electrochemical platform for nicotine sensing in cigarettes and chewing gums. In *Acta Chimica Slovaca*. Vol. 8, no. 2 (2015), p. 166-171. ISSN 1337-978X. (in English)
8. DOBROČKA, Edmund - NOVÁK, Patrik - BÚC, Dalibor. Measuring of residual stresses in strongly textured thin films. In *Materials Structure*. Vol. 22, No. 3 (2015), p. 171-172. ISSN 1211-5894. (in English)
9. FILO, Juraj - MIŠICÁK, Róbert - CIGÁŇ, Marek - WEIS, Martin - JAKABOVIČ, Ján - GMUCOVÁ, Katarína - PAVÚK, Milan - DOBROČKA, Edmund - PUTALA, Martin. Oligothiophenes with the naphthalene core for organic thin-film transistors: variation in positions of bithiophenyl attachment to the naphthalene. In *Synthetic Metals*. Vol. 202, (2015), p. 73-81. ISSN 0379-6779. (in English)

10. GUCMANN, Filip - KÚDELA, R. - KORDOŠ, Peter - DOBROČKA, Edmund - GAŽI, Štefan - DÉRER, Ján - LIDAY, Jozef - VOGRINČIČ, Peter - GREGUŠOVÁ, Dagmar. III-As heterostructure field-effect transistors with recessed ex-situ gate oxide by O2 plasma-oxidized GaAs cap. In *Journal of Vacuum Science and Technology B*. Vol. 33, No. 1 (2015), Art. no. 01A111 [5] p. ISSN 1071-1023. (in English)

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12. HOTOVÝ, Ivan - KOSTIČ, Ivan - NEMEC, Pavol - PREDANOCY, Martin - ŘEHÁČEK, Vlastimil. Patterning of titanium oxide nanostructures by electron-beam lithography combined with plasma etching. In *Journal of micromechanics and microengineering*. Vol. 25, No. 7 (2015), Art. no. 074006 [7] p. ISSN 0960-1317. (in English)

13. CHVÁLA, Aleš - DONOVAL, Daniel - ŠATKA, Alexander - MOLNÁR, Marián - MAREK, Juraj - PRÍBYTNÝ, Patrik. Advanced methodology for fast 3-D TCAD device/circuit electrothermal simulation and analysis of power HEMTs. In *IEEE Transactions on Electron Devices*. Vol. 62, No. 3 (2015), p. 828-834. ISSN 0018-9383. (in English)

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15. IŽÁK, Tibor - BABCHENKO, Oleg - JIRÁSEK, Vít - VANKO, Gabriel - VOJS, Marian - KROMKA, Alexander. Influence of diamond CVD growth conditions and interlayer material on diamond/GaN interface. In *Materials Science Forum*. Vol. 821-823, (2015), p. 982-985. ISSN 0255-5476. (in English)

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19. KOTTFER, Daniel - MARTON, Marián - FERDINANDY, Milan - TREBUŇA, Peter - KACZMAREK, Lukasz. A study of structural and wear properties of PACVD deposited a-C:H thin films for application as protective layers on Al alloys. In *Physica Status Solidi (A)-Applications and Materials Science*. Vol. 212, No. 10 (2015), p. 2271–2277. ISSN 1862-6300. (in English)

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27. NEVŘELA, Juraj - MIČJAN, Michal - NOVOTA, Miroslav - KOVÁČOVÁ, Soňa - PAVÚK, Milan - JUHÁSZ, Peter - KOVÁČ, Jaroslav Jr. - JAKABOVIČ, Ján - WEIS, Martin. Secondary doping in poly(3,4-ethylenedioxythiophene):Poly(4-styrenesulfonate) thin films. In *Journal of polymer science. Part B. Polymer physics*. Vol. 53, No. 16 (2015), p. 1139–1146. ISSN 0887-6266. (in English)

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30. RADIČOVÁ, Monika - BEHÚL, Miroslav - VOJS, Marian - BODOR, Róbert - VOJS STAŇOVÁ, Andrea. Voltammetric determination of erythromycin in water samples using a boron-doped diamond electrode. In *Physica Status Solidi B - Basic Solid State Physics*. Vol. 252, No. 11 (2015), p. 2608-2613. ISSN 0370-1972. (in English)

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INSTITUTE OF NUCLEAR AND PHYSICAL ENGINEERING

http://www.ujfi.fei.stuba.sk/

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GENERAL INFORMATION:

Institute of Nuclear and Physical Engineering was created on May 1, 2011 by the merger of former Department of Physics with Department of Nuclear Physics and Technology. The Institute is a teaching and research unit of the Faculty of Electrical Engineering and Information Technology (FEI). The main mission of the Institute is educational activities and the integration and creative development of various scientific, research, as well as other technical activities. The institute acts as a special guarantor of the study subjects which are also provided by the institute in the frame of accredited study programmes offered by the Slovak University of Technology. Through its own teaching, scientific, research and development activities, the Institute is responsible in particular for development in the following areas: General Physics and Mathematical Physics, Physics of Condensed Matter and Acoustics, Nuclear and Subnuclear Physics, Material Science, Environmental Engineering, Electrotechnology and Materials, Nuclear Power Engineering and Technology, Biomedical Engineering, Physical Engineering.

DEPARTMENTS OF THE INSTITUTE:

Department of Physics
Department of Nuclear Physics and Technology

I. STAFF OF THE INSTITUTE:

Professors	Peter Ballo, Július Cirák, Rudolf Durný, Július Krempaský, Jozef Lipka, Marcel Miglierini, Vladimír Nečas, Márius Pavlovič, Jozef Sitek, Vladimír Slugeň
Associate Professors	Peter Bokes, Peter Dieška, Gabriel Farkas, Ján Haščík, Róbert Hinca, Andrea Šagátová, Ján Vajda, Pavol Valko
Assistant Professors	Juraj Chlpík, Soňa Halászová, Katarína Sedlačková, Mária Valková, Marek Vančo, Klement Vitázek, Ivan Zelenay, Miroslava Zemanová Dieškova
Research Workers	Amine Bouhaddane, Štefan Čerba, Jarmila Degmová, Július Dekan, Martin Hornáček, Ľubomír Keleši, Martin Konôpka, Kristína Krištofová,

	Jakub Lüley, Patrik Novák, Milan Pavúk, Martin Petriska, Stanislav Sojak, Matúš Stacho, Tomáš Váry, Jana Šimeg Veterníková, Eva Vitkovská, Branislav Vrban, Andrej Zeman
Technical Staff	Eva Mániková (secretary), Peter Mikula, Zuzana Váciová
PhD. Students	Dana Barátová, Iveta Bartošová, Jozef Bokor, Tomáš Brodziansky, Ľubica Darážová, Lenka Dujčíková, Dominika Holková, Tomáš Iliť, Štefan Motyčák, Filip Osuský, Stanislav Pecko, Andrej Slimák, Jozef Snopek

II. EQUIPMENT

II.1 Teaching and Research Laboratories

- Laboratories of Elementary and Advanced Physics
- Laboratory of Bioelectronics and Organic Materials
- Laboratory of Applied Optics
- Laboratory of AFM/MFM Microscopy
- Laboratory of X-ray Diffraction
- Laboratory of Thermophysical Properties
- Laboratory of Macrostructure of Composites
- Laboratory of Material Simulation
- Laboratory of Optical Spectroscopy
- Laboratory of Spectroscopy
- Center for Computational Materials Science

Nuclear Technologies Centre Bratislava:

- Computer Laboratory
- Laboratory of Low Level Radioactivity Measurements
- Laboratory of Mössbauer Spectroscopy
- Laboratory of Neutron Physics
- Laboratory of Positron Annihilation Spectroscopy
- Laboratory of Radioactive Isotopes
- Laboratory of Reactor Physics
- Laboratory of Semiconductor Detectors

Nuclear Technology Centre Allegro Jaslovské Bohunice

- Material Science Laboratory
- Radioenvironmental Laboratory

II.2 Special Measuring Instruments and Computers

- Mössbauer Spectrometers - 2 units (77 - 1200 K)
- CEMS/CXMS Spectrometer
- Life-Time and Angular Correlation Positron Annihilation Spectrometers
- Doppler Broadening Spectrometer
- Low-Background Chamber with HPGe detector and gamma ray spectrometer
- Department's LAN computer network

- 16 PC Cluster (124 CORES) + 7PC Cluster (24 CORES)
- Amptek Experiment's XRF Kit
- KETEK SDD and AXAS-D Systems
- Supercomputer (48 CORES)
- Refrigerator Cooled Cryostat NOK-10-3D
- Langmuir - Blodgett Deposition Device, Nima, U.K.
- Modular LB Technology for Deposition of Organic Layers.
- Spectroscopic Ellipsometer Horiba MM-16
- Measuring Microscope CZJ
- Radiation Imaging Camera FitPIX
- Brewster Angle Microscope
- Neutron Flux Measurement System with 3He and BF3 Detectors
- Modular Spectrofluorimeter, Horiba, Fluorolog 3 (TCSPC module incl.)
- Low-Background alpha/beta proportional counter
- Portable Radon Monitor Alpha Guard
- Portable Alpha/Beta Counter iSolo
- Lucas Cell Radon monitor
- Atomic Force Microscope VEECO EDGE
- Schott UV Line 9100 Spectrophotometer
- Numerical Server with 16 Nodes (128 CORES) with Infiniband
- 3 Numerical Servers (clusters) with 50 Nodes (120 CORES) - Supporting Infrastructure (incl. Myrinet)
- Sun Storage Tek 6140 FC Maxperf
- 2 x Sun Fire Server

II.3 Special Software

- Particle Beam Optics Laboratory PBO Lab™ 2.1
- Transport
- Trace-3D
- Electrostatic Palette
- WinAGILE
- MATLAB R2006A
- SRIM
- MCNP-4C2, MCNP 5, MCNP x 2.7.0
- VISED
- SCALE 4.4a, SCALE 6
- GENIE 2000, LABSOCS 4.2.1
- GoldSim
- CONFIT
- Field Precision - STATIC FIELD ANALYSIS TOOLKIT (TK 0300)
- Visiplan Suite 4.0 3D ALARA planning tool
- CASINO
- ERANOS 2.0
- Beamline Simulator Software

III . TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer

Nuclear Installations   (4th sem., 3-2h)   V. Nečas, J. Haščík, V.Slugeň

Sources of Radiation	(6th sem., 2-3h)	M. Miglierini
Environmentalistics	(6th sem., 3-2h)	J. Sitek, J. Degmová
Physics 1	(2nd sem., 3-3h)	J. Vajda, J. Cirák
Special Seminar - Physics 1	(2nd sem., 0-2h)	J. Vajda, J. Cirák
Physics	(2nd sem., 3-3h)	P. Ballo
Special Seminar - Physics	(2nd sem., 0-2h)	P. Ballo
Physics 2	(4th sem., 3-3h)	J. Chlpík
Special Seminar - Physics 2	(4th sem., 0-2h)	J. Chlpík
Physics 1	(1st sem., 2-3h)	P. Ballo, J.Vajda, J.Cirák
Special Seminar - Physics 1	(1st sem., 0-2h)	P.Ballo, J.Vajda,J. Chlpík
Physics 2	(3rd sem., 3-3h)	J. Cirák, P. Valko
Special Seminar - Physics 2	(3rd sem., 0-2h)	J. Cirák, P. Valko
Physics 3	(4th sem., 2-2h)	P.Valko
Modeling and Simulation	(5th sem., 2-3h)	P. Ballo
Thermodynamics of Materials and Statist. Physics	(6th sem., 3-2h)	M. Moško
Solid State Physics	(6th sem., 3-2h)	P. Bokes
Computer Networks and Controls in Nuclear and Physical Engineering	(6th sem, 2-2)	K. Vitázek

III.2 Graduate Study (Ing.)

Nuclear Physics and Technology	(1st sem., 2-2h)	A. Šagátová
Team Project (EE)	(1st sem., 0-4h)	J. Haščík, R. Hinca, J. Sitek
Materials of Nuclear Power Plants	(1st sem., 2-2h)	V. Nečas
Theory of Nuclear Reactors	(2nd sem., 2-2h)	J. Haščík
Atomic and Molecular Spectroscopy	(2nd sem., 2-2h)	M. Miglierini
Experimental Reactor Techniques	(2nd sem., 2-2h)	J. Haščík
Dosimetry	(2nd sem., 2-2h)	R. Hinca
Methods of Nuclear Physics	(3rd sem., 2-2h)	M. Miglierini
Fundamentals of Particle Accelerators	(2nd sem., 2-2h)	M. Pavlovič
Biomedical Accelerators	(3rd sem., 2-2h)	M. Pavlovič
Operation of Nuclear Power Plants	(3rd sem., 2-2h)	V. Slugeň
Decommissioning of Nuclear Power Plants	(3rd sem., 2-2h)	V. Nečas
Safety and Reliability of Power Engineering Installations	(4th sem., 2-2h)	V. Slugeň
Modern Methods of Material Diagnostics	(4th sem., 2-2h)	E. Dobročka
Nuclear electronics	(1st sem., 2-1h)	J. Sitek, M. Petriska
Radiation Protection and Ecology	(1st sem., 2-2h)	V. Slugeň, R. Hinca
Field Theory	(2nd sem., 2-2h)	P. Valko
Semiconductor and Metallic Materials	(2nd sem., 2-2h)	P. Dieška, R. Durný
Bioelectronics	(3rd sem., 2-2h)	J. Cirák
Photonic Materials and Metamaterials	(3rd sem, 2-2h)	J. Chlpík
Principles of Applied Optics	(1st sem., 2-2h)	J. Vajda
Dielectric and Magnetic Materials	(2nd sem, 2-2h)	R. Durný
Material Structures and Technologies	(1st sem., 2-2h)	P. Ballo
Nanotechnology	(3rd sem., 2-2)	J. Cirák
Applied Optics	(2nd sem., 2-2h)	J.Vajda
Computational Physics	(2nd sem., 2-2h)	M. Konôpka

Biomaterials and Biosystems	(2nd sem., 2-2h) J. Cirák

III.4 Distance Study

Nuclear Installations	(6th sem., 12 h) S. Sojak
Safety and Reliability of Power Engineering Installations	(4th sem., 12h) V. Slugeň
Physics 1	(3rd sem., 24 h) J. Chlpík
Physics 2	(4th sem., 24 h) J. Chlpík

IV . RESEARCH PROJECTS

IV.1 National Scientific Projects (VEGA, APVV, KEGA)

- Radioactive Materials in Perspective Nuclear Fuel Cycles and in Nuclear Installations under Decommissioning Process, VEGA 1/0796/13, V. Nečas
- Pixel Sensors of X- and Gamma Rays for Using Primarily in Digital Imaging,VEGA 2/0062/13, V. Nečas
- Design and Realization of Education in Interdisciplinary Branches on International Level, KEGA 019STU-4/2012, M. Pavlovič
- Analyse of Radiation Induced Activity in Power Reactor Materials and their Influence on Microstructure, VEGA 1/0204/13, V. Slugeň
- Evaluation of Radiation Resistance of ODS Steels for Fusion and Fission Technologies, VEGA 1/0366/12, J. Degmová
- New Semiconductor Detectors of Neutrons, APVV-0321-11, A. Šagátová
- Nanocrystalline Complexes of Iron in Biological Tissues, VEGA 1/0220/12, M. Miglierini
- National Centre for Research and Application of Renewable Energy Sources, OP Research:
- IMTS 26240120028, J. Cirák, R. Durný, P. Markoš
- Transport Processes in Inhomogeneous Structures, VEGA 1/0372/13, P. Markoš
- Nanocomposite Thin Films Properties and Applications in Sensorics, VEGA 2/0165/13,   R. Durný
- New Challenges in Physics Education at Technical Universities, VEGA, 031STU-4/2013, P. Bokes
- Electromagnetic and Electronic properties of Small Systems and Metamaterials, APVV-0108-11, P. Markoš
- NANOTIP – Tip-induced SPM processes: Imaging and nanomanipulations, APVV-0207-11, P. Bokes
- Competence Centre for New Materials, Advanced Technologies and Energetics, ERDF,. P. Ballo, J. Cirák, Š. Čerba, J. Dekan, M. Miglierini, V. Nečas, M. Pavlovič, M. Pavúk, S. Sojak, A. Šagátová
- Neutronic Analyses of Gas Cooled Fast Reactor, APVV-0123-12, J. Haščík
- Centre for Operation and Decommissioning of Nuclear Facilities (CEPVYJZ), Grant of   Ministry of Education No 001STU-2/2014, V. Slugeň
- Novel stabilized and structurally ordered optically and photoelectrically active organic materials, VEGA 1/0501/15, J. Cirák
- Integrated education in nanotechnologies and nanosciences, KEGA, 026 STU-4/2015, J. Cirák
- Research Centre ALLEGRO, ASFEU, ITMS 26220220198, V. Slugeň

IV.2 International Scientific Projects

- Eurofusion Consortium, EU Horizon 2020 project No633053, V. Slugeň
- Irradiation Tests of Magnetic Alloy and Organic Insulator Materials. Bilateral Agreement STU-GSI Darmstadt, M. Pavlovič
- Structural and Magnetic Properties of Ion Irradiated Metallic Glasses, Sk/PL-0032-12, M. Miglierini

- European Union - Japan Cooperation, EUJEP 2, 2015-2017, J. Haščík
- ENEN Cooperation with Russian in Nuclear Education, Training and Knowledge Management. J. Haščík
- Positron Annihilation Study of Reactor Materials, Project GP01/1011014702 with AREVA NP, GmbH, V. Slugeň
- Nanoalloys as Advanced Materials: From Structure to Properties and Applications (Nanoalloy) Cost Action MP 0903, M. Miglierini

- Structural Forms of Iron Deposits in Organismus, SK-CZ-2013-0042, M. Miglierini
- Study of Hydrogen Interactions with Defects in Structural Alloys using Positron Anihilation Spectroscopy, SK-CZ-2013-0197, V. Slugeň

V. COOPERATION

V.1 Cooperation in Slovakia

- DECOM a.s., Trnava
- DECONTA a.s., Trnava
- Comenius University, Bratislava, School of Medicine
- Comenius University, Bratislava, Faculty of Mathematics, Physics and Informatics
- Comenius University, Bratislava, Faculty of Pharmacy Comenius University, Bratislava,
- Comenius University, Bratislava, Faculty of Natural Science
- Slovak Academy of Sciences, Bratislava, Geological Institute,
- Slovak Academy of Sciences, Bratislava, Institute of Electrical Engineering
- Slovak Academy of Sciences, Bratislava, Institute of Measurement Science
- Slovak Academy of Sciences, Bratislava, Institute of Physics
- Slovak Academy of Sciences, Bratislava, Institute of Informatics
- Slovak Academy of Sciences, Bratislava, Institute of Materials and Machine Mechanics
- Slovak Academy of Sciences, Bratislava, Institute of Polymers
- Slovak Academy of Sciences, Košice, Institute of Experimental Physics
- Institute of Preventive and Clinical Medicine, Bratislava
- International Laser Centre, Bratislava
- University of P. J. Šafarik, Institute of Physical Sciences, Košice
- VUJE a.s., Trnava
- Nuclear Regulatory Authority of the Slovak Republic, Bratislava
- Relko Ltd., Bratislava
- Slovak Electric Ltd., (SE a.s.), Bratislava
- Nuclear Decommissioning Company, plc., (JAVYS), Bratislava
- Slovak Electric Ltd., Mochovce Nuclear Power Plant, SE a.s.Mochovce
- Slovak Electric Ltd., Bohunice Nuclear Power Plant, SE a.s. Jaslovské Bohunice
- Slovak Office for Normalization, Metrology and Testing, Bratislava
- Slovak Institute of Metrology, Bratislava
- BIONT Inc., Bratislava
- National Nuclear Fund of Slovak Republic, Bratislava
- Faculty of Chemical and Food Technology, STU, Bratislava
- Faculty of Informatics and Information Technologies, STU, Bratislava
- Faculty of Mechanical Engineering, STU, Bratislava
- University of Trnava, Trnava
- Technical University of Košice, Faculty of Electrical Engineering and Information Technology, Košice
- Slovak Legal Metrology Institute, Banská Bystrica
- University of Žilina, Faculty of Electrical Engineering, Žilina
- University Centre of Electron Accelerators, SMU in Trenčín

V.2 International Cooperation

- All-Russian Scientific Institute of Experimental Physics, Theoretical Physics Department, Sarov, Russia
- Atominstitut der Technischen Universität, Vienna, Austria
- Centro de Investigación y de Estudios Avanzados del IPN Unidad Saltillo, Mexico
- Department of Nuclear Reactors, Czech Technical University in Prague, CzR
- EFDA Close Support Unit, Garching, Germany
- Flerov Laboratory of Nuclear Reactions, Joint Institute of Nuclear Research, Dubna, Russia
- Forschungszentrum Jülich, Institute of Bio- and Nanosystems, Germany
- AREVA-NP, Erlangen, Germany
- Leibniz Institut für Festkörper- und Werkstofforschung, Dresden, Germany
- Institute for Nuclear Research of the Russian Academy of Sciences, Neutron Research Department, Moscow, Russia
- Institute for Theoretical and Experimental Physics, High Energy Density in Matter Produced by Heavy Ion Beam Department, Moscow, Russia
- Institute for Energy and Transport, European Commission, JRC Petten, The Netherlands
- Institute of Nuclear Techniques, Budapest University of Technology and Economics, Hungary
- Institute of Thin Films and Interfaces, Research Centre Jülich, Germany
- International Atomic Energy Agency, Vienna, Austria
- Laboratory of Nuclear Problems, Joint Institute of Nuclear Research, Dubna, Russia
- Leibniz Institute für Festkörperphysik, University Vienna, Austria
- Nuclear Research Institute, Řež, CzR
- Universität der Bundeswehr, Münich, Germany
- University of Gent, Belgium
- Palacky University, Olomouc, Czech Republic
- Institute of Experimental and Applied Physics, Czech Technical University in Prague, CzR
- Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, Řež, CzR
- University of Applied Sciences, Wiener Neustadt, A-2700, Austria
- Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, CzR
- Aalto University School of Science and Technology, Finland
- Wroclaw University of Technology, Wroclaw, Poland
- CENTRALSYNC , Inst. Of Physic, AVČR, Prague, CzR,
- Hungarian Academy of Sciences, Budapest, Hungary)
- Tomáš Baťa University, Zlín, CzR
- Institute of Macromolecular Chemistry, AVČR, Prague, CzR
- Natural Science Faculty, Charles University, Prague, CzR
- VŠB-TU, Ostrava, CzR
- West Bohemian University, Plzeň, CzR
- FORTH Heraklion, Greece
- Tokyo Institute of Technology, Tokyo, Japan
- Fukuoka University, Fukuoka, Japan
- Universitat Politécnica de Catalunya, Barcelona, Spain
- PTB Braunschweig, Germany
- Humboldt University, Berlin, Germany
- Delft University, Delft, The Netherlands
- Institute of Solid State Physics, Graz University of Technology, Graz, Austria
- Ames Laboratory, Ames, Iowa, USA
- UF Gainesville, USA
- Korea Atomic Energy Research Institute (KAERI), Daejeon, South Korea

V.3 Contract-based Business Activities

- J. Haščík: Periodical Training of Supervising Physicists of the NPP Bohunice, JAVYS and Mochovce on the Experimental Nuclear Reactors. Contract with NPPs Bohunice, Mochovce
- M. Pavlovič: Distant Teaching of Radiation and Nuclear Physics at the University of Applied Sciences Wiener Neustadt, Austria
- M. Pavlovič: Distant Teaching of Accelerator Technology at the University of Applied Sciences, Wiener Neustadt, Austria
- J. Haščík: An independent assessment of the possibility of acquisition and use of programs SVL and SVC for the Nuclear Regulatory Authority SR
- G. Farkas: Criticality Safety Analysis of Spent Fuel Storage System for VVER-440 Units for the Nuclear Regulatory Authority SR
- G. Farkas: Criticality Safety Analysis of Interim Spent Fuel Storage for the Nuclear Regulatory Authority SR
- R. Hinca: Radiation Safety Analysis of electron welding System for Prvá Zváračská Company

VI. THESES

VI. 1 Masters Theses

Masters theses supervised at the Institute of Nuclear and Physical Engineering. The names of supervisors are in brackets.

- M. Cesnek: Structural positions of iron in the brain issues (M. Miglierini
- A. Danáč: Radiological impact assessment of geological repository on the population around specific components of the biosphere (V. Nečas)
- N. Gál: Preparation and properties of submicron superconductor-ferromagnet heterostructures (P. Valko)
- P. Hošťák: Determination of radon emanation (R. Hinca)
- M. Jašica: The use of nuclear reactors for the production of radioisotopes (M. Pavlovič)
- A. Kelemen: Criticality safety Analyses with the Monte Carlo Method (G.Farkas)
- M. Krajčovič: Doses evaluation of the sludge fixation facility operators by the simulation code Visiplan 3D Alara (V. Nečas)
- M. Okál: Ab initio simulations of spin-dependent effects (P. Ballo)
- F. Osuský: Contribution of small LOCA to the core damage frequency (K. Vitázek)
- M. Sedlák: Experimental study of nuclear structure of gold isotopes (K. Vitázek)
- N. Vujisicová: Neutron Rich Radioactive Beams (J. Cirák)

VI.2 PhD. Theses

- Š. Čerba: Reactivity control system of the gas cooled fast reactor (V. Nečas)
- J. Jančovič: Hydrogen dynamics in the containment of nuclear power plants during several accidents (V. Slugeň)
- A. Slimák: Melting of contaminated metallic materials in the process of the decommissioning of nuclear installations (V. Nečas)
- R. Strážovec : Research and development of innovative Technologies for the treatment and conditioning of liquid radioactive materials and their impact on the environment(V. Nečas)
- B. Vrban: Advanced fast neutron reactors (J. Haščík)

VII. OTHER ACTIVITIES

- Organization of the Postgraduate Study "Nuclear Installation Operation Safety Aspects" for participants from different organizations. Organized for SE, a. s.
- Organization of students excursion to Atom Institute in Vienna
- Students Practical Exercises at the TRIGA Mark II Reactor in Atom Institute of the Austrian Universities, Vienna, Austria
- Students Practical Exercises at the Training Reactor of the Budapest University of Technology and Economics, Budapest, Hungary
- Students Practical Exercises at the Training Reactor of the Czech Technical University in Prague, Czech Republic
- Organization of French-Slovak –Czech Seminary "Progressive materials in nuclear power engineering and under irradiation effects", Kočovce , 21 – 25 Sept. 2015
- Public Lessons for physics popularisation (V. Slugeň, M. Miglierini, P. Ballo, M. Pavlovič, J. Haščík)
- Organization of Technical Tour "Physics on the wheels", Lausanne and Cadarache, 18 – 24 May 2015
- Contribution to organization of technical exposition and measurement of radiation of human body at festival POHODA 2015 in Trenčín
- Organization and Program Committee The 20th international conference - Applied Physics of Condensed Matter, APCOM 2015, Štrbské Pleso, 24 – 26 June 2015, (J. Sitek, J. Vajda)
- Club of physicists (J. Cirák)
- Organization conference Mössbauerovské rojení, Bratislava, 10 – 11 October 2015

VIII. MEMBERSHIP IN INSTITUTIONS AND COMMITTEES

VIII.1 Membership in National Institutions/Committees

- Slovak National Nuclear Found (V. Slugeň, vice-chairman)
- Slovak Nuclear Society (V. Slugeň - chairman, J. Degmová, J. Haščík, R. Hinca, G. Farkas, K. Vitázek, J. Lipka, M. Miglierini, V. Nečas, M. Pavlovič, M. Petriska, J. Sitek, S. Sojak, M. Stacho, A. Šagátová, J. Veterníková,)
- State Examination Committee for the Verification of Operating Staff of Nuclear Installations Specific Abilities (J. Haščík, V. Slugeň, R. Hinca, G. Farkas)
- Scientific Council of SUT (V. Slugeň)
- Scientific Council of FEIIT SUT (V. Slugeň, J. Cirák)
- Scientific Council of FME SUT (R. Durný)
- Board of editors, Journal of Electrical Engineering (P. Ballo)
- Board of Nuclear Safety SE-EBO (J. Haščík)
- Board of Nuclear Safety JAVYS (V. Nečas)
- Board of Nuclear Safety SE-EMO (R. Hinca)
- Council of Nuclear Regulatory Authority of the Slovak Republic (V. Nečas, V. Slugeň)
- Co-ordination Board for Cooperation with JINR Dubna (M. Pavlovič)
- Scientific Council of Slovak Institute of Metrology (V. Nečas)
- Slovak Physical Society (P. Ballo, P. Bokes, J. Cirák – chairman, R. Durný, M. Miglierini, V. Nečas, M. Pavlovič , J. Sitek, J. Vajda, M. Zemanová Diešková)
- Slovak Spectroscopic Society (M. Miglierini - president, J. Sitek, member)
- International Union of Pure and Applied Physics, (J. Cirák - chair of Slovak Committee)
- Committee for Collaboration with Universities of SE – ENEL, (A. Šagátová)
- Slovak Agency for Science (V. Nečas – chairman of Committee VEGA 7)
- Acreditation Commission SR Group of Electrical Engineering (J. Sitek)

- European Nuclear Society (V. Slugeň - board member)
- EC Sustainable Nuclear Energy Technology Platform (V. Slugeň - board member)
- ENEN Association (M. Miglierini, J. Haščík, V. Slugeň)
- European Physical Education Network (V. Slugeň)
- German Nuclear Society (V. Slugeň)
- International Board on the Applications of the Mössbauer Effect "IBAME" (M. Miglierini)
- International Journal of Nuclear Energy Science and Technology, Member of the Editorial Board (V. Nečas)
- International Journal of Nuclear Knowledge Management, Member of the Editorial Board (J. Lipka, V. Slugeň)
- OECD/NEA Bank's Computer Program Service (J. Lipka -Liaison Officer)
- The Research Board of Advisors of the American Biographical Institute (M. Pavlovič)
- The Advisory Council of the International Biographical Centre Cambridge (M. Pavlovič)
- The High Scientific Council at European Nuclear Society (V. Slugeň)
- International Jordan Journal of Physics, Member of the International Advisory Board (J. Lipka)
- European Nuclear Council (V. Slugeň)
- European Human Resources Observatory in Nuclear, member of senior advisory group (V. Slugeň)
- European Nuclear Energy Forum – member of WG Risks (V. Slugeň)
- International Committee of American Nuclear Society - board member (V. Slugeň)
- American Physical Society (J.Cirák)
- Europhysical Society (P. Ballo, P. Bokes, J. Cirák, R. Durný, J. Krempaský, P. Markoš, P. Valko)
- IEEE (J. Cirák)
- The New York Academy of Sciences (J. Krempaský)
- Academia Scientiarum et Artium Europaea (J. Krempaský)

IX. PUBLICATIONS

Books

1. SLUGEŇ, Vladimír - BOŽÍK, Miroslav - HATALA, Branislav - MIKLOŠ, Marek - FARKAS, Gabriel. *Nuclear fuel cycle*. 1. ed. Bratislava : Pedagogically publishing house DIDAKTIS, 2015. 180 p. ISBN 978-80-8166-001-6. (in English)
2. ŠIMEG VETERNÍKOVÁ, Jana. *Study of materials for advanced reactor systems*. 1. ed. Saarbrücken : LAP LAMBERT Academic Publishing, 2015. 121 p. ISBN 978-3-659-75823-2. (in English)

Textbooks

1. SITEK, Jozef - DEGMOVÁ, Jarmila. *Environmentalistics*. 1. ed. Bratislava : Slovak University of Technology Press, 2015. 288 p. ISBN 978-80-227-4324-2. (in Slovak)

Journals

1. BARÁTOVÁ, Dana - NEČAS, Vladimír. Evaluation of uncertainties related to the near field model of geological repository for spent nuclear fuel. In *World Journal of Engineering and Technology*. Vol. 3, (2015), p. 163-169. ISSN 2331-4222. (in English)
2. BOHÁČ, Vlastimil - DIEŠKA, Peter - VRETENÁR, Viliam - OPATT-FIDRÍKOVÁ, Danica - ŠTOFANIK, Vladimír - MARKOVIČ, M. New planar disc transient method for the measurement of thermal properties of materials. In *Advanced Materials Research*. Vol. 1126, (2015), p. 16-21. ISSN 1022-6680. (in English)

3. DUJČÍKOVÁ, Lenka - BUIRON, Laurent - HAŠČÍK, Ján. Development and Analysis of SFR Control Rod Design. In *World Academy of Science, Engineering and Technology : International Journal of Physical and Mathematical Sciences*. Vol. 2, No. 9 (2015), on-line. ISSN 1307-6892. (in English)

4. FILO, Juraj - MIŠICÁK, Róbert - CIGÁŇ, Marek - WEIS, Martin - JAKABOVIČ, Ján - GMUCOVÁ, Katarína - PAVÚK, Milan - DOBROČKA, Edmund - PUTALA, Martin. Oligothiophenes with the naphthalene core for organic thin-film transistors: variation in positions of bithiophenyl attachment to the naphthalene. In *Synthetic Metals*. Vol. 202, (2015), p. 73-81. ISSN 0379-6779. (in English)

5. FRIDRICHOVÁ, Jana - BAČÍK, Peter - RUSINOVÁ, Petra - ANTAL, Peter - ŠKODA, Radek - BIZOVSKÁ, Valéria - MIGLIERINI, Marcel. Optical and crystal‑chemical changes in aquamarines and yellow beryls from Thanh Hoa province, Vietnam induced by heat treatment. In *Physics and Chemistry of Minerals*. Vol. 42, No. 4 (2015), p. 287-302. ISSN 0342-1791. (in English)

6. GOKHMAN, Aleksandr - PECKO, Stanislav - SLUGEŇ, Vladimír. Cluster dynamics study of damage accumulation in helium-implanted Fe–2.5at%Cr alloy. In *Radiation Effects and Defects in Solids*. Vol. 170, No. 2 (2015), p. 130-137. ISSN 1042-0150. (in English)

7. GOKHMAN, Aleksandr - PECKO, Stanislav - SLUGEŇ, Vladimír. Simulation of nanostructure evolution under helium implantation in Fe–(2.5–12.5)at% Cr alloys at a temperature of 343 K. In *Radiation Effects and Defects in Solids*. Vol. 170, No. 9 (2015), p. 745-757. ISSN 1042-0150. (in English)

8. HASIAK, Mariusz - MIGLIERINI, Marcel - KALETA, Jerzy - BUJDOŠ, Marek. Magnetocaloric properties of Fe75Mo8Cu1B16 and Fe81Mo8Cu1B10 metallic glasses. In *Acta Physica Polonica A*. Vol. 127, No 2 (2015), p. 608-610. ISSN 0587-4246. (in English)

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Journal of Applied Physics. Vol. 117, Iss. 17 (2015), Art. no. 17B718 [4] p. ISSN 0021-8979 (P). (in English)

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31. NEVŘELA, Juraj - MIČJAN, Michal - NOVOTA, Miroslav - KOVÁČOVÁ, Soňa - PAVÚK, Milan - JUHÁSZ, Peter - KOVÁČ, Jaroslav Jr. - JAKABOVIČ, Ján - WEIS, Martin. Secondary doping in poly(3,4-ethylenedioxythiophene): Poly(4-styrenesulfonate) thin films. In *Journal of polymer science. Part B. Polymer physics*. Vol. 53, No. 16 (2015), p. 1139–1146. ISSN 0887-6266. (in English)

32. NOVÁK, Patrik - GOKHMAN, Aleksandr - DOBROČKA, Edmund - BOKOR, Jozef - PECKO, Stanislav. Investigation of helium implanted Fe-Cr alloys by means of x-ray diffraction and positron annihilation spectroscopy. In *Journal of Electrical Engineering*. Vol. 66, No. 6 (2015), p. 334–338. ISSN 1335-3632. (in English)

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35. PERKÓ, Zoltán - PELLONI, Sandro - MIKITYUK, Konstantin - KŘEPEL, Jiri - SZIEBERTH, Máté - GAËTAN, Girardin - VRBAN, Branislav - LÜLEY, Jakub - ČERBA, Štefan - HALÁSZ, Máté - FEHÉR, Sándor - REISS, Tibor - KLOOSTERMAN, Jan Leen - STAINSBY, Richard - POETTE, Christian. Core neutronics characterization of the GFR2400 gas cooled fast reactor. In *Progress in Nuclear Energy*. Vol. 83, (2015), p. 460-481. ISSN 0149-1970. (in English)

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40. SLUGEŇ, Vladimír. Considerations about the european decommissioning academy (EDA). In *Bezpečnost jaderné energie*. Vol. 23, Iss. 5/6 (2015), p. 169-172. ISSN 1210-7085. (in English)

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Conference Proceedings

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5. BARTOŠOVÁ, Iveta - ČÍŽEK, J. - DOMÁNKOVÁ, M. - SLUGEŇ, Vladimír. Complex analyses of ODS steels. In *ELITECH´15 : 17th Conference of doctoral students. Bratislava, Slovak Republic, May 25, 2015*. Bratislava : STU, 2015, CD-ROM, [5] p. ISBN 978-80-227-4358-7. (in English)

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9. BOKOR, Jozef - PAVLOVIČ, Márius. Beam-transport study of a superconducting rotating gantry for proton-therapy beam. In *ELITECH´15 : 17th Conference of doctoral students. Bratislava, Slovak Republic, May 25, 2015*. 1. ed. Bratislava : STU, 2015, CD-ROM, [9] p. ISBN 978-80-227-4358-7. (in English)

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INSTITUTE OF POWER AND APPLIED ELECTRICAL ENGINEERING

http://ueae.fei.stuba.sk/buxus/generate_page.php?page_id=160

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GENERAL INSTRUCTION:

Institute of Power and Applied Electrical Engineering FEI STU is specialized in development of the following areas: electrical power engineering, heavy current engineering, light engineering, electrotechnology, renewable energy, applied mechanics and mechatronics, economics and management in electrical power engineering and safety of electric equipment.

The main role of the institute is integrated and developed factually related educational, scientific, research and development activities by creative way. The lecturers of institute are specialized in subjects in all three levels of accredited degree programs.

The institute has well equipped laboratories in which are solved scientific and research projects in the domestic and foreign grants and also European programs.

We consider an important part of our work cooperation with industry, where members of the institute are involved in solving of scientific and specialized tasks for the partners from Slovak Republic, as well as various European countries.

Departments of Institute of Power and Applied Electrical Engineering

Department of Electrical Power Engineering

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I. STAFF OF INSTITUTION

Professors	František Janíček, Alfonz Smola, Vladimír Šály
Associate Professors	Anton Beláň, Žaneta Eleschová, Miroslava Farkas Smitková, Dionýz Gašparovský, Ľudovít Hüttner, Miroslav Kopča, Jaroslav Lelák, Ferdinand Valent, Michal Váry
Assistant Professors	Peter Janiga, Ľudovít Jurčacko, Attila Kment, Juraj Packa, Marek Pípa, Peter Poljovka
Research Workers	Boris Cintula, Roman Dubnička, Vladimír Ďurman, Jozef Holjenčík, Dušan Korgo, Juraj Kubica, Vladimír Kujan, Martin Liška, Martin Nádaský, Milan Perný, Jana Raditschová, Anton Rusnák, Ľuboš Trunkvalter, Milan Uhrík, Dominik Viglaš
Technical Staff	Anna Ferenčíková, Jana Jusková, Eva Molotová, Miriam Szabová
PhD. Students	Peter Arnold, Michal Barčík, Jozef Bendík, Matej Cenký, Anton Cerman, Lukáš Grinaj, Igor Halán, Pavol Heretík, Marián Ivanič, Terézia Janúšková Skoršepová, Michal Koníček, Matúš Kováč, Lukáš Lipnický, Vladimír Volčko, Jozef Zuščak

II. EQUIPMENT

II.1 Teaching and Research Laboratories

- Laboratory for testing and measurement of electric machines
- Laboratory of special electric machines
- Laboratory of short circuit tests (with a high current generator source 35 kA, 2 MVA, 440 V)
- Laboratory of short circuit tests (with a capacitor source)
- Laboratory of controlled drives and servosystems
- Laboratory of power electronics
- Laboratory of overvoltage protection
- Photovoltaic laboratory
- High voltage and ageing tests laboratory
- Laboratory of cables and wires
- Laboratory of health protection at work
- Laboratory of dielectric properties of materials
- Laboratory of liquid dielectrics
- Laboratory of magnetic materials
- Laboratory of high voltage technology
- Laboratory of lighting technology
- Solar energy laboratory
- Laboratory of electrical installations
- Laboratory of special problems of power engineering
- Laboratory of electrical protections
- Laboratory of renewable energy sources

- Excellence laboratory of smart grids
- Lighting innovation centre (LIC)

II.2 Special Measuring Instruments, Software and Computers

- Lucas-Nülle didactic equipment for subjects Power Electronics and Controlled Drives
- SIMOVERT, SIMOREG and VONSCH power converters
- Laboratory stands with digital signal processors TMS 320 C 50
- Test chambers for combined ageing tests of insulating systems
- Solar simulator for photovoltaics
- Climatic test chamber FEUTRON
- Systems for measuring of complex impedance (Wayne Kerr 6500P Solarton Analytical ModulLab (10^{-3}-10^6 Hz)
- Vibration magnetometer PVM-1
- Solar cells electric characterization equipment (Keithley 2440)
- Meteorological data acquisition systém
- High voltage amplifier Trek 40/15
- High voltage tester VLF-34E
- Power network analyzer BK 550
- Cascade transformer, 1200 kV, 1500 kVA
- Impulse generator, 2500 kV, 100 kJ
- 333 m long 123 kV, 245 kV and 420 kV testing power line with combined earth wire and applied tenzometers
- Mobile insulation diagnosis and analyzing system Midas 2881 G with transformer turns ratio meter
- Climate chamber 2 m^3, with adjustable temperature range -75 to 180 °C and relative humidity 0 to 100 %
- Analog partial discharge meter Tettex
- Schering bridges
- Thermocamera Fluke Ti55
- Thermocamera Flir
- Cogeneration unit with installed electric power of 20 kW
- Cogeneration unit with installed electric power of 40 kW
- Photovoltaic power plant with installed power of 20 kW$_{peak}$
- Off-grid container- type photovoltaic power plant with installed power of 1,5 kWpeak
- 23 kW Electric heat pump
- Solar concentrator with 6 parabolic mirrors and a Stirling type heat machine
- Experimental biogas station with dry fermentation process
- Experimental pumped storage hydro power plant
- Installation system Instabus EIB
- Photometric integrator Ø 3 m
- Spectrofotometer
- Luminance meters and analyzer
- Measuring equipment for optical materials
- Rotating mirror-type goniophotometer
- Set of gray and edge optical filters with optical table
- Albedometer and pyrheliometer
- LightTools
- Precision high power voltage and current source, 2500VA, Class 0.2
- 4 canal osciloskop SCOPIX III - OX 7104
- Digital power meter WT1600
- Neplan software
- IDspecto Head End System

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Basics in Modelling in Power Engineering	(5th sem., 2-2h)	A. Beláň
Economics of Power Systems	(3th sem. 2-2h)	F. Janíček
Electric Apparatus and Distribution Stations	(6th sem., 3-2h)	F.Janíček, Ľ. Hüttner
Electric Machines	(5th sem., 3-2h)	Ľ. Hüttner
Energy Efficiency	(3th sem. 2-2h)	F. Janíček
Energy Sources and Conversion	(6th sem., 3-2h)	F. Janíček, J. Kubica
High Voltage Technology	(5th sem., 2-3h)	J. Lelák, A. Kment
Lighting Technology	(6th sem., 3-2h)	A. Smola
Power Stations 1	(5th sem. 2-2h)	F. Janíček, M. Pípa
Safety in Electrical Engineering	(1st sem., 2-1h)	M. Kopča, J. Packa
Safety and Protection of Health at Work II	(4th sem., 1-2h)	M. Kopča, V. Šály
Safety of Electric Equipment	(6th sem., 2-1h)	M. Kopča
Solar energy devices and systems	(5th sem., 2-2h)	V. Šály
Transmission and Distribution of Electrical Energy	(4th sem., 3-2h)	Ž. Eleschová

III.2 Graduate Study (Ing.)

Applied Electrical Power Engineering	(2nd sem., 2-2h)	A. Beláň
Artificial Lighting	(4th sem., 2-1h)	A. Smola
Automotive Lighting Systems	(3rd sem., 2-2h)	A. Smola
Diagnostics and Expert Systems	(2nd sem., 2-2h)	Ž. Eleschová, A. Kment
Distribution Networks and Planning	(3rd sem., 2-2h)	D. Gašparovský, P. Janiga
Electrical Part of Power Stations	(2nd sem., 2-2h)	I. Daruľa, M. Pípa
Electric Drives and Power Electronics	(1st sem., 2-2h)	J. Lelák, M. Perný, V. Kujan
Electronic Energy Converters	(2nd sem., 2-2h)	Ľ. Hüttner , V.Kujan
Electrical Substations and Equipments	(1st sem., 2-2h)	F. Janíček, F. Valent
Environmental Ecology	(1st sem., 2-2h)	F. Janíček, J. Kubica
Intelligent Electrical Installations in Buildings	(3rd sem., 2-2h)	A. Smola, P. Janiga
Lighting Applications	(1st sem., 2-2h)	D. Gašparovský
Lighting Systems	(2nd sem., 2-2h)	D. Gašparovský
Luminaires	(1st sem., 2-2h)	D. Gašparovský
Measurement of Light and Colours	(2nd sem., 2-2h)	D. Gašparovský, R. Dubnička
Metallic and Optical Wires and Cables	(1st sem., 2-2h)	J. Lelák
Off-grid power systems	(1st sem., 2-2h)	Ž. Eleschová, M. Pípa
Photometry and Colorimetry	(1st sem., 2-2h)	A. Smola, R. Dubnička
Power System Control	(3rd sem., 2-2h)	A. Beláň
Protections and Automatics in Power Systems	(3rd sem., 2-2h)	F. Janíček
Quality Management	(4th sem., 2-1h)	F. Janíček, P. Poljovka
Safety of Electric Equipment	(2nd sem., 2-1h)	M. Kopča
Smart Grid in E-mobility	(3rd sem., 2-2h)	A. Beláň, P. Janiga
Smart Materials and their Applications in Mechatronic Systems	(4th sem., 2-2h)	J. Lelák, M. Váry

Special Electric Machines	(2nd sem., 3-2h) Ľ. Hüttner, M. Uhrík
Steady State in Power System	(1st sem., 2-2h) Ž. Eleschová
Transient Phenomena in Power System	(2nd sem., 2-2h) Ž. Eleschová

III.3 Undergraduate and Graduate Study for Foreign Students in English

All subjects can be lectured in English.

III.4 Distance Study

Applied Electrical Power Engineering	A. Beláň
Basics in Modelling in Power Engineering	A. Beláň
Diagnostics and Expert Systems	Ž. Eleschová, A. Kment
Electric Apparatus and DistributionStations	F. Janíček, Ľ. Hüttner
Electric Drives and Power Electronics	J. Lelák, M. Perný, V. Kujan
Electric Machines	Ľ. Hüttner
Electrical Part of Power Stations	I. Daruľa, M. Pípa
Electrical Substations and Equipments	F. Janíček, F. Valent
Energy Sources and Conversion	F. Janíček, J. Kubica
Environmental Ecology	F. Janíček, J. Kubica
High Voltage Technology	A. Beláň, A. Kment
Lighting Technology	A. Smola
Metallic and Optical Wires and Cables	J. Lelák
Off-grid power systems	Ž. Eleschová, M. Pípa
Power Stations 1	F. Janíček, M. Pípa
Power System Control	A. Beláň
Protections and Automatics in Power Systems	F. Janíček
Quality Management	F. Janíček, P. Poljovka
Safety and Protection of Health at Work II	M. Kopča
Solar energy devices and systems	V. Šály
Steady State in Power System	Ž. Eleschová
Transient Phenomena in Power System	Ž. Eleschová
Transmission and Distribution of Electrical Energy	Ž. Eleschová, P. Janiga

IV.1 National Projects

- Energy Efficiency of Lighting Systems in Buildings. VEGA 1/0988/12. Duration: 2012-2015 (completed). (D. Gašparovský)
- Smart Grid as Part of Power Distribution Networks – New Measurement Methods and Consumption Control Methods. VEGA 1/1000/12. Duration: 2012-2015 (completed). (A. Beláň)
- Centre of Competence in New Materials, Advanced Technologies and Power Engineering. Duration: 2011-2015 (completed). ITMS 26240220073. (F. Janíček)
- Finalizing of the National Centre for Research and Applications of Renewable Energy Sources. Duration: 2011-2015 (completed). ITMS 26240120028. (F. Janíček)
- Light and Lighting Technology Research Centre (cooperation with OMS, spol. s r. o.). Duration: 2011-2015 (completed). ITMS 26220220150. (D. Gašparovský)
- Wind and Solar Power Accumulation System with Vanadium Batteries (cooperation with Hydrogen Slovakia). Duration: 2011-2015 (completed). ITMS 26220220133. (F. Janíček)

- International Centre of Excellence for Research on Intelligent and Secure Information and Communications Technologies and Systems (cooperation with Atos IT Solutions and Service, s.r.o.). Duration: 2014-2015 (completed). ITMS 26240120039. (F. Janíček)
- Process Optimization Silane Crosslinking of Cable Cores (cooperation with VUKI, a.s.). Duration 2012-2015 (completed). APVV- 0097-11. (J. Lelák)
- Research of Impregnants without Reactive Monomer (Monomer Free) (cooperation with VUKI, a.s.). Duration 2012-2015 (completed). APVV-0181-11. (J. Lelák)
- Research and Development of Silicon Carbide Thin Film Technologies for Applications in Solar Cells and Thin Film Devices (cooperation with Slovak Academy of Science). Duration 2013-2016 (continued). APVVV-0443-12. (V. Šály)
- Research of Energy Efficiency of Asynchronous Drivers with Frequency Converter and their Negative Feedback Effect on the Grid and the Possibilities of Elimination (Project of an Excelent Team of Young Researchers). Duration 2015-2016 (continued). (M. Perný)

IV.2 International Projects

- Measurement Tools for Smart Grid Stability and Quality. ENG52 Smart Grid II. Duration: 2014-2017 (continued). (P. Janiga)
- Renewable Energy Studies in Western Balkan Countries (RESi), part of TEMPUS programme (http://resi-tempus.uni-hohenheim.de/), 544504, 2013-2016 (continued). (F. Janíček)
- Strategic Alignment of Electrical Engineering in European Higher Education Institutions (SALEIE), 527877-LLP-1-2012, 2012-2015 (completed). (F. Janíček)

V. COOPERATION

V.1 Cooperation in Slovakia

- ABB, s.r.o., Bratislava
- Applied Precision, s.r.o., Bratislava
- Armed Forces Academy of General Milan Rastislav Štefánik, Liptovský Mikuláš
- Atos IT Solutions and Sevices, spol. s r.o., Bratislava
- BEZ, a.s., Bratislava
- BSH Drives and Pumps, s.r.o., Michalovce
- Central Slovak Distribution Company (SSE a.s.) Žilina
- Delta Energy Systems, s.r.o., Nová Dubnica
- Eastern Slovak Distribution Company (VSE a.s.), Košice
- ELBA, a.s., Kremnica
- Elektroservis, s.r.o., Bratislava
- Elektro Global Slovakia, s.r.o., Bratislava
- Elkond HHK, a.s., Trstená
- ENEL, a.s., Slovakia
- Energetické strojárne, s.r.o. Košice
- ERMS s.r.o., Bratislava
- EZ-Elektromont, a.s.
- Faculty of Electrical Engineering and Information Technology TU Košice
- Faculty of Electrical Engineering ŽU Žilina
- Foxcon Slovakia, s.r.o., Nitra
- Hakl, s.r.o., Bratislava
- Hydro Power Plants (SE-VET) Trenčín, o.z.
- IFT InForm Technologies, a.s., Bratislava

- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Materials Machine & Mechanics, Slovak Academy of Sciences, Bratislava
- Institute of Materials Research, Slovak Academy of Sciences, Košice
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- Kiwa, s.r.o., Nitra
- Legrand Slovakia, s.r.o.
- Microstep-HDO, a.s., Bratislava
- Eaton Slovakia, s.r.o.
- Ministry of Internal Affairs of the Slovak Republic
- Murat, s.r.o., Pezinok
- Nafta, a.s., Bratislava
- Nuclear Power Plants Research Institute (VUJE a.s.) Trnava
- Nuclear Power Plants (SE-EBO) Jaslovské Bohunice
- Nuclear Power Plants (SE-EMO) Mochovce
- **Nuclear Decommissioning Company (JAVYS a.s.)** Jaslovské Bohunice
- OEZ Slovakia, s.r.o.
- OMS, spol. s r.o., Senica
- OSRAM, a.s., Nové Zámky
- Pavol Jozef Šafárik Univesity, Košice
- PHOENIX CONTACT, s.r.o., Bratislava
- Philips Slovakia s.r.o., Bratislava
- PPC Čab, a.s., Nové Sady
- PSJ Hydrotranzit, a.s., Bratislava
- Regulatory Office for Network Industries (ÚRSO) Bratislava
- Relko, s.r.o., Bratislava
- Sféra, a.s., Bratislava
- Siemens, s.r.o., Bratislava
- Schneider Electric Slovakia, s.r.o., Bratislava
- Schrack Technik, s.r.o., Bratislava
- Slovak Electricity Transmission System (SEPS a.s.) Bratislava
- Slovak Institute of Metrology, Bratislava
- Slovak Power Company (SE - Enel a.s.) Bratislava
- Slovak Telekom, a.s., Bratislava
- Slovak University of Agriculture in Nitra
- Slovnaft, a.s., Bratislava
- Slovak Academy of Science, Bratislava
- Sylex, s.r.o., Bratislava
- United States Steel Slovakia, s.r.o. Košice
- VÚJE, a.s., Trnava
- VUKI, a.s., Bratislava
- Volkswagen Slovakia, a.s., Bratislava
- Western Slovak Distribution Company (ZSE a.s.) Bratislava
- ŽOS Trnava, a.s., Trnava

V.2 International Cooperation

- ABB, s.r.o., Brno, Czech Republic
- ABB Corporate Research, Baden Daettwil, Switzerland
- Angel Kunchev University of Rousse, Bulgaria
- Aristotle University, Thessaloniki, Greece
- Biroul Roman de Metrologie Legala, Romania
- BOKU - University of Natural Resources and Life Sciences, Vienna, Austria
- Brno University of Technology, Czech Republic

- Czech Metrology Institute in Brno, Czech Republic
- Czech Technical University in Prague, Czech Republic
- DEHN+SOHNE, Neumarkt, Germany
- Dzemal Bijedic University of Mostar, Bosnia & Herzegovina
- École Polytechnique Fédérale de Lausanne, Switzerland
- Eidgenössisches Institut für Metrologie, Switzerland
- Electrical Testing Facility, Prague, Czech Republic
- Foundation for Research and Technology, MRG-IESL, Heraklion, Crete, Greece
- Frauenhofer Institute for Solar Energy Systems ISE, Freiburg, Germany
- GE Lighting, Budapest, Hungary
- Hellenic Institute of Metrology, Greece
- Helvar, Frankfurt, Germany
- HESS TRADING, Sudoměřice, Czech Republic
- Institute of Inorganic Chemistry, Academy of Sciences, Řež, Czech Republic
- Institut za Mjiteljstvo Bosne i Hercegovine, Bosnia and Herzegovina
- Istituto Nazionale di Ricerca Metrologica, Italy
- Laboratoire national de métrologie et d'essais, France
- MEI Moscow, Russia
- Mittatekniikan Keskus, Finland
- Motorpal, a.s., Světlá Hora, Czech Republic
- National Physical Laboratory, United Kingdom
- NKT Cables, Czech Republic
- OEZ Letohrad, Czech Republic
- Osram, GmbH, München, Germany
- PHOENIX CONTACT, Brno, Czech Republic
- Piezoceram, s.r.o., Hradec Králové, Czech Republic
- Politechnika Opolska, Opole, Poland
- PROTECH Group, s.r.o., Klatovy, Czech Republic
- Saint Cyril and Methodius University, Faculty of Electrical Engineering and Information Technologies,
- Skopje, Macedonia
- Seconda Università degli Studi di Napoli, Italy
- Silesian University of Technology, Gliwice, Poland
- Silcotec Europe, Ltd., Ireland
- Slovenski Institut za Kakovost in Meroslovje, Slovenia
- Solartec, s.r.o., Rožnov pod Radhoštem, Czech Republic
- SP Sveriges Tekniska Forskningsinstitut AB, Sweden
- Tashkent Institute of Irrigation and Melioration, Faculty of Electrification and Automation, Tashkent, Uzbekistan
- Technical University of Brno, Czech Republic
- Technical University Ilmenau, Germany
- Technische Universiteit Eindhoven, Netherlands
- Thorn Lighting CS, Prague, Czech Republic
- Tianjin University, Tianjin, China
- Tokai University, Japan
- Trescal A/S, Denmark
- Tridonic, Dornbirn, Austria
- Tungsram Schréder, Budapest, Hungary
- UA of BAJA CALIFORNIA, Mexicali B.C., Mexico
- University of Hohenheim, Institute of Agricultural Engineering, Germany
- University of Stuttgart, Institute for Energy Economics and the Rational Use of Energy, Germany
- University of Zenica, Bosnia & Herzegovina
- Visteon, Nový Jičín, Czech Republic
- VŠB – Technical University of Ostrava, Czech Republic
- VSL, Netherlands
- Warsaw University of Technology, Poland

- WREN - World Renewable Energy Network, Reading, United Kingdom
- WSC – World Solar Challenge, Adelaide, Australia
- Vienna University, Vienna, Austria

V.3 Contract-based Businees Activities

- Technical Advice and Consultancy in the Field of Smart Metering. Contract with Západoslovenská distribučná, a.s. Bratislava (F. Janíček et al.)
- Report to the Cause of Damage of Transformer and Compensation Regarding to the Investigation of Insured Event No. 1361102649. Contract with Allianz - Slovenská poisťovňa. (A. Beláň, J. Packa, B. Cintula)
- Tests of MV Cables by Impulse Withstand Voltage. Contract with nkt cables Ltd. Veľké Meziříčí, Czech republic (A. Kment et al.)
- Prophylactic Measurement of Stator Winding Insulation of Motor with Uncoupled Node. Contract with Slovnaft, a.s. Bratislava (A. Kment et al.)
- Services Related to the Project "Measuring Instruments for Stability and Quality of Smart Grids" Contract with Slovenský metrologický ústav, Bratislava (F. Janíček et al.)
- Verification Measurements of the ZnO Surge Arresters. Contract with Schneider Electric Slovakia, spol. s r.o., Bratislava (A. Kment et al.)
- Verification Measurements of the Mobile Switching Station 110 kV PASS M0 - Insulation Resistance and Surge Arresters . Contract with SAG Elektrovod, a,s, Bratislava (A. Kment et al.)
- Verification Measurements of a Resistive Divider. Contract with IBA Dosimetry GmbH, Germany (A. Kment et al.)
- Comparative Measurements on the Oiltester Portatest - 100A. Contract with Slovenské elekrárne, a,s, Bratislava (A. Kment et al.)
- Measurement of Insulation Resistance of Cables, Contract with Slovenské elektrárne, a.s. , Bratislava. (M. Váry et al.)
- Interlaboratory Comparison of Accelerated Ageing Temperature. Contract with VUJE, a.s. , Trnava. (M. Váry et al.)

VI. THESES

VI.1 Masters Theses

Masters theses supervised at the Departments of Institute of Power and Applied Electrical Engineering. The names of supervisors are in brackets.

- Beláňová, B.: Photovoltaic power plants and their impact on electrical power system of the SR (Ž. Eleschová)
- Bendík, J.: Electromagnetic fields of high voltage power transmission lines, their exposure limits on residents and the consequences to design of a power transmission line (M. Pípa)
- Berík, M.: The design and implementation of external protection against atmospheric electricity for the park house (M. Kopča)
- Cenký M.: Electrical parameters of HV and UHV overhead lines and their influence on the line transposition (M. Pípa)
- Cipala, P.: Design of cogeneration unit (M. Pípa)
- Daniš, M.: Characterization of heterostructures for photovoltaics based on Si/SiC (M. Váry)
- Dindoffer, E.: Parameters and mathematical models of excitation systems of synchronous generators (Ž. Eleschová)
- Fondrk, D.: Design and implementation of internal protection against lightning and overvoltage for the selected family house (M. Kopča)

- Guniš, M.: Design of comparison digital relays validation (F. Janíček)
- Havlík ,T.: System of protection against surge of low-voltage electrical installations (Ľ. Hüttner)
- Hloška, M.: Lightning protection system design and application for house (M. Kopča)
- Holomek, J.: Modernisation of asynchronous traction drive elevator (V. Kujan)
- Klopan, P.: Mathematical modeling and stability of synchronous generator (Ž. Eleschová)
- Maier, R.: Dynamic properties of asynchronous motors in auxiliary system of nuclear power plant (Ž. Eleschová)
- Navrátil, M.: The use of artificial intelligence methods and techniques for the design of electric engines (M. Uhrík)
- Oravský, I.: Analysis of the impact of a fault conditions on the transient stability of synchronous generator (B. Cintula)
- Pilát, B.: Calibration of electricity meter (P. Janiga)
- Pojzl, I.: Program to assess the stability of the power systems by the properties of the Jacobi matrix (Ž. Eleschová)
- Poništ, P.: Extinguishing system of modular circuit-breaker (Ľ. Jurčacko)
- Schramm, A.: Design of Cogeneration Unit (M. Pípa)
- Síkeli, J.: Verification of a calibrating pulse generator for the purpose of measuring discharges (A. Kment)
- Sláma, J.: SR energy concept in terms of the new legislation on renewables penetration (F. Janíček)
- Szombath, T.: Trends in protection development of 400 kV power lines (F. Janíček)
- Šilhár, M.: Proposal laboratory workplace for research of solar equipment with solar tracking (M. Pípa)
- Škumát, T.: Tests of 400 kV insulator sets (A. Kment)
- Tószegi, M.: Smart-home separate object design up to 10 kW (F. Janíček)
- Urminský, M.: Analysis of dynamic behavior of diesel generator in auxiliary system of nuclear power plant (Ž. Eleschová)
- Víglaský, M.: The influence of the winding parameters on the operating conditions of the asynchronous motor (M. Uhrík)
- Žák, M.: Proposal of automotive LED headlight (A. Smola)

VI.2 Doctoral Theses

- Arnold, P.: Partial discharge activity based on physical modelling (P. Šándrik)
- Cerman, A.: Modelling of the return currents in electric traction (F. Janíček)
- Heretík, P.: Influence of current impulse of block transformer during switching parallel or electrical near transformer (A. Beláň)
- Janúšková, S. T.: Degradation processes in cable systems caused by combined stress (M. Váry)
- Jedinák, M.: Remedial actions for fulfillment N-1 security criterion (F. Janíček)
- Kováč, M.: Methods and procedures for voltage stability assessment of a power system (Ž. Eleschová)
- Kubala, M.: Impact of primary and secondary legislation on changes in the electricity market (F. Janíček)
- Kusko, M.: Technological processes and their optimization for high performance achievement of silicon crystalline solar cell structures (V. Šály)
- Schulze, Ch.: Advanced analysis of energy supply of buildings using evolutionary algorithms (F. Janíček)
- Skurčák, Ľ.: Influence the configuration of external HV and EHV substations to the size of electric and magnetic fields of power supply frequency in terms of protection of persons (A. Beláň)
- Špok, M.: Current and future challenges in the generation of nuclear energy (F. Janíček)
- Volčko, V.: Smart grid - impact on the operation, safety and stability of electrical power system (Ž. Eleschová)
- Janík, M.: Research of physiological glare of drivers in case of overlapping roads (D. Gašparovský)

VII. OTHER ACTIVITIES

- Education activities with students of ERASMUS – Parra Arroyo Victor, Civello Antonino, Tertre Villalón Manuel,Cippitelli Cristina, Di Cosmo Mariachiara, Marta Bonet Arbos

- Director of National Centre for Research and Development of Renewable Energy Sources, STU Bratislava (F. Janíček)
- Guarantee of the Power Engineering Section of the Conference Electrical Engineering, Information Technology and Telecommunication 'ELOSYS 2015', Trenčín, October 2015 (F. Janíček)
- Activities in International Steering Committee – PVSEC 2015 (V. Šály)
- Bilateral Agreement, Socrates Programme Higher Education (ERASMUS) STU Bratislava - Angel Kunchev University of Rousse (V. Šály)
- The Accredited Educational Activity ´The Education in the Area of Safety and Protection of Health at Work § 21, § 22, § 23´ (M. Kopča)
- The Accredited Educational Activity ´The Electrical Minimum´ (M. Kopča)

VIII. MEMBERSHIP IN INSTITUTIONS AND COMMITTEES

VIII.1 Membership in National Institutions/Committees

- Members of Common Departmental Committee of Scientific Department 5.2.11 Electromechanical Energy Conversion at STU FEI (Ľ. Hüttner, F. Valent)
- Member of Common Departmental Committee of Scientific Department 5.2.11 Electromechanical Energy Conversion at University of Žilina (Ľ. Hüttner)
- Chairman of Technical Standardization Committee No. 43 (Electrical Power Engineering) at Slovak Institute for Standardization (A. Beláň)
- Member of the Competence Centre Executive Committee "New Measurement Methods and Consumption Control Methods", STU Bratislava (F. Janíček)
- Member of Program Board of the Conference Electrical Engineering, Information Technology and Telecommunication 'ELOSYS 2015', Trenčín, October 2014 (F. Janíček, A. Beláň)
- Members of Technical Standardization Committee No. 108 (Light and Lighting) at Slovak Institute for Standardization (A. Smola, D. Gašparovský, R. Dubnička, P. Janiga, J. Raditschová)
- Member of Technical Standardization Committee No. 20 (Light Fittings and Light Sources) at Slovak Institute for Standardization (A. Smola)
- Chairman of Technical Standardization Committee No. 84 (Electrical Installations and Protection against Electric Shock) at Slovak Institute for Standardization (D. Gašparovský)
- Member of Technical Standardization Committee No. 84 (Electrical Installations and Protection against Electric Shock) at Slovak Institute for Standardization (P. Janiga)
- Member of Academic Senate of STU in Bratislava (F. Janíček)
- Member of Scientific Council of STU in Bratislava (F. Janíček)
- Member of Scientific Council of FEI STU in Bratislava (F. Janíček)
- Member of Scientific Council of Žilina University (F. Janíček)
- Member of Scientific Council of Academy of the Armed Forces of General Milan Rastislav Štefánik in Liptovský Mikuláš (F. Janíček)
- Member of Scientific Council of Special Technology Faculty of Alexander Dubček University of Trenčín (F. Janíček)
- Member of Council for Smart-grid Systems Implementation in Power System of Ministry of Economy SR (F. Janíček)
- Chairman of the Working Group for Sustainable Energy under the Ministry of Education and Science (F. Janíček)
- Member of Expert Group Preparing New Energy Strategy of SR (F. Janíček)
- Member of Slovak Nuclear Forum (F. Janíček)
- Chairman of Committee for Cooperation with Universities SE-ENEL – STU (F. Janíček)
- Chairman of Slovak Committee of World Energy Council (F. Janíček)
- Director of Forensic Institute of Electrical and Computer Technology (A. Smola)
- Members of the Slovak Lighting Society (A. Smola, P. Janiga, A. Rusnák, L. Lieskovská)
- Chairman of the Slovak Lighting Society (D. Gašparovský)
- Members of the Presidium of Slovak Lighting Society (R. Dubnička, J. Raditschová)

- Member of the Presidium of Slovak Electrotechnical Association (D. Gašparovský)
- Chairman of the Slovak National Committee CIE (R. Dubnička)
- Vice-chairman of the Slovak National Committee CIE (D. Gašparovský)
- Members of the Slovak National Committee CIE (A. Smola, P. Janiga, A. Rusnák, J. Raditschová)
- Membership in the Steering Committee for Smart Metering Implementation in Slovakia (A. Beláň)
- Chairman of Departmental Committee of Scientific Department 5.2.30 Electrical Power Engineering (F. Janíček)
- Members of Departmental Committee of Scientific Department 5.2.30 Electrical Power Engineering (A. Beláň, Ž. Eleschová, I. Daruľa, A. Smola)
- Member of Editorial Board of the Journal EE - Elektrotechnika a energetika (Journal of Electrical and Power Engineering), Bratislava (F. Janíček)
- Member of Editorial Board of the Journal of Electrical Engineering, Bratislava (F. Janíček)
- Member of Editorial Board of the Journal TZB Haustechnik (Technical Buildings Installations), Bratislava (A. Smola)
- Head of the Institute of Experts at the Faculty of Electrical Engineering and Information Technology, STU Bratislava (A. Smola)

VIII.2 Membership in International Institutions/Committees

- Members of International Scientific Committee of the 16th International Scientific Conference "Electric Power Engineering 2015", Kouty nad Desnou, Czech Republic, May 2015 (A. Beláň, Ž. Eleschová, F. Janíček)
- Members of International Scientific Committee of the International Scientific Symposium on Electrical Power Engineering, Stará Lesná, Slovak Republic, September 2015 (A. Beláň, J. Lelák, F. Janíček)
- Members of International Reviewing Committee of European Photovoltaic Solar Energy Conference, Hamburg, September 2015, Germany (V. Šály)
- Members of International Reviewing Committee of World Renewable Energy Congress, Bucharest, June 2015, Romania (V. Šály)
- CIGRE – International Council on Large Electric Systems, Paris (A. Beláň)
- CIRED – International Conference on Electricity Distribution, London (A. Beláň)
- IEEE - Institute of Electrical and Electronics Engineers, New Jersey (A. Beláň)
- Member of World Energy Council, London (F. Janíček)
- Member of Committee on Energy Research and Technology IEA, Paris (F. Janíček)
- IEC - International Electrotechnical Commision, member of TC 64 Electrical Installations and Protection Against Electric Shock (P. Janiga)
- CEN - European Committee for Standardization, Brussels, Member of TC 169 Light and Lighting (D. Gašparovský)
- CIE – International Commission on Illumination, Vienna, Associate Director of Division 4, Secretary of Division 5 (D. Gašparovský)
- ISO - International Organization for Standardization, Geneva, member of TC 274 Light and Lighting (D. Gašparovský)
- Honorary Member 'Society friends of public lighting', Czech Republic (A. Smola)
- Representative of Slovak Republic in the Science and Energy Technology Expert Group of International Energy Agency (F. Janíček)
- Member of Editorial Board of the Journal Světlo, Prague, Czech Republic (D. Gašparovský, A. Smola)
- Member of Editorial Board of the Journal Electrical Engineering in Practice, Ostrava, Czech Republic (A. Beláň)
- WREN - World Renewable Energy Council /Network, UK (V. Šály)

IX. PUBLICATIONS

Journals

1. BRILLA, Igor - JANÍČEK, František. Numerical solution of boundary inverse problems for plane orthotropic elastic solids. In *International Journal of Mechanics*. Vol. 9, (2015), p. 323-328. ISSN 1998-4448. (in English)
2. HÜTTNER, Ľudovít - JURČACKO, Ľudovít - VALENT, Ferdinand - VÁRY, Michal. Arc extinguishing in the DC and photovoltaic networks. In *Plasma Physics and Technology Journal*. Vol. 2, Iss. 1 (2015), p. 25-29. ISSN 2336-2626. (in English)
3. ILIŤ, Tomáš - VÁRY, Michal - VALKO, Pavol. On the thrust of a single electrode electrohydrodynamic thruster. In *Journal of Electrical Engineering*. Vol. 66, No. 2 (2015), p. 117–120. ISSN 1335-3632. (in English)
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5. JANIGA, Peter - LIŠKA, Martin - BELÁŇ, Anton - VOLČKO, Vladimír - IVANIČ, Marián. Power Quality Measurement of Small Solar off-Grid System. In *WSEAS Transactions on Environment and Development*. Vol. 11, (2015), p. 49-56. ISSN 2224-3496. (in English)
6. JUHÁSZ, Peter - VÁRY, Michal - STUCHLÍKOVÁ, Ľubica - HARMATHA, Ladislav - JAKABOVIČ, Ján - WEIS, Martin. Characterization of charge traps in pentacene diodes by electrical methods. In *Organic Electronics*. Vol. 17, (2015), p. 240-246. ISSN 1566-1199. (in English)
7. LIŠKA, Martin - ELESCHOVÁ, Žaneta - JANIGA, Peter - IVANIČ, Marián - BELÁŇ, Anton. Analysis of the Criterion for Connecting New Source to Distribution Grid According to the Steady State Evaluation. In *WSEAS Transactions on Power Systems*. Vol. 10, (2015), p. 180-187. ISSN 1790-5060. (in English)
8. LIŠKA, Martin - BELÁŇ, Anton - CERMAN, Anton - JANÍK, Matej. Control system of battery storage to eliminate the power variation according to the electricity prediction. In *Transactions on Electrical Engineering*. Vol. 4, No. 4 (2015), p. 97-101. ISSN 1805-3386. (in English)
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10. PERNÝ, Milan - ŠÁLY, Vladimír - VÁRY, Michal. Impedance spectroscopy of Al/a-SiC/c-Si(n)/Al solar heterojunction structure. In *Transactions on Electrical Engineering*. Vol. 4, No. 3 (2015), p. 59-63. ISSN 1805-3386. (in English)
11. PERNÝ, Milan - ŠÁLY, Vladimír. Sun-powered trains. In *Quark*. Vol. 21, Iss. 10 (2015), p. 46-47. ISSN 1335-4000. (in Slovak)
12. PERNÝ, Milan - VÁRY, Michal - ŠÁLY, Vladimír. Impedance spectroscopy - an effective diagnostic tool in electrical engineering and technology. In *Energetika*. Vol. 65, Iss. 12 (2015), p.646-650. ISSN 0375-8842. (in Slovak)
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16. TIMÁR, Pavel - STOPKA, Ján - BÁLEŠ, Vladimír - TIMÁR, Pavol, Jr. - JANÍČEK, František. The energy intensity of the recovery process transformer oil. In *Energetika*. Vol. 65, Iss. 11 (2015), p. 580-582. ISSN 0375-8842. (in Slovak)

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18. VOLČKO, Vladimír - LIŠKA, Martin - ELESCHOVÁ, Žaneta - JANIGA, Peter. Smart grid system for low voltage grids - "iNES". In *Energetika*. Vol. 65, Iss. 8-9 (2015), p. 435-8. ISSN 0375-8842. (in Slovak)

Conference Proceedings

1. BARČÍK, Michal - LIPNICKÝ, Lukáš - GAŠPAROVSKÝ, Dionýz. Photometric and colorimetric parameters of bicycle luminaires. In *Slovalux 2015 : 4th Technical conference. Jasná, Slovak Republic, June 9-10, 2015*. Bratislava : SSTS, 2015, p. 85-89. ISBN 978-80-972014-7-0. (in Slovak)

2. BARČÍK, Michal - JANIGA, Peter - GAŠPAROVSKÝ, Dionýz - LIPNICKÝ, Lukáš. Adaptive street lighting. In *ELOSYS. Elektrotechnika, informatika a telekomunikácie 2015 : Trenčín, Slovakia. October 13-15, 2015*. Bratislava : STU, 2015, CD-ROM, p. 67-70. ISBN 978-80-227-4437-9. (in English)

3. BARČÍK, Michal - GAŠPAROVSKÝ, Dionýz. Proposal for standardization of switching and control profiles in public lighting. In *Lux junior 2015. Tagungsband Proceedings : 12. Internationales forum für den lichttechnischen nachwuchs. Dörnfeld bei Ilmenau, Germany. September 25- 27, 2015*. Ilmenau : Technische Universität Ilmenau, 2015, CD-ROM, [7] p. ISBN 978-3-927787-51-3. (in English)

4. BARČÍK, Michal - GAŠPAROVSKÝ, Dionýz. Sample calculations for the composition of energy performance scales in road lighting reparation. In *LIGHT-SVĚTLO 2015 : proceedings of the 21st International Conference. Brno, Czech Republic, 8. - 10. 9. 2015*. Brno : Brno University of Technology, 2015, USB, p. 169-171. ISBN 978-80-214-5244-2. (in English)

5. BENDÍK, Jozef - KMENT, Attila - PÍPA, Marek. Enumeration of magnetic flux density generated by power transmission lines. In *Electric power engineering 2015 : 16th International scientific conference. Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 396-401. ISBN 978-1-4673-6787-5. (in English)

6. BRILLA, Igor - JANÍČEK, František. Numerical determination of elastic coefficients for orthotropic plates. In *CAIP´2015 : 12° Congreso interamericano de computación aplicado a la industria de procesos. Cartagena de Indias, Colombia. 14 al 17 de Septiembre de 2015*. Bogotá : Universidad Libre, 2015, CD-ROM, [6] p. ISBN 978-958-8791-82-1. (in English)

7. CENKÝ, Matej - PÍPA, Marek - KMENT, Attila. Computations of electrical parameters of untransposed overhead lines. In *Electric power engineering 2015 : 16th International scientific conference. Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 406-411. ISBN 978-1-4673-6787-5. (in English)

8. CERMAN, Anton - JANÍČEK, František. 2-D simulation of distribution of stray current in soil generated by the DC railway traction. In *ELITECH´15 : 17th Conference of doctoral students. Bratislava, Slovak Republic, May 25, 2015*. Bratislava : STU, 2015, CD-ROM, [5] p. ISBN 978-80-227-4358-7. (in English)

9. CERMAN, Anton - JANÍČEK, František - KUBALA, Milan. Resistive-type network model of stray current distribution in railway DC traction system. In *Electric power engineering 2015 : 16th International scientific conference. Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 364-368. ISBN 978-1-4673-6787-5. (in English)

10. CERMAN, Anton - JANÍČEK, František - HALÁN, Igor. 2-D model of stray current distribution in railway DC traction system. In *Elektroenergetika 2015 : 8th International scientific symposium on electrical*

power engineering. Stará Lesná, Slovakia. September 16-18, 2015. Košice : Technical University of Košice, 2015, CD-ROM, p. 519-522. ISBN 978-80-553-2187-5. (in English)

11. CINTULA, Boris - ELESCHOVÁ, Žaneta - BELÁŇ, Anton. Methodology of global assessment of operational states of power system using deterministic approach. In *Electric power engineering 2015 : 16th International scientific conference. Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 127-131. ISBN 978-1-4673-6787-5. (in English)

12. DUBNIČKA, Roman - RUSNÁK, Anton - GAŠPAROVSKÝ, Dionýz. Analysis of non-recoverable lighting loses of luminaires. In *Electric power engineering 2015 : 16th International scientific conference. Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 37-41. ISBN 978-1-4673-6787-5. (in English)

13. DUBNIČKA, Roman - RUSNÁK, Anton - JANIGA, Peter. Change of the spectral power distribution of luminaires under various electrical conditions. In *Electric power engineering 2015 : 16th International scientific conference. Kouty nad Desnou, Czech Republic. May 20-22, 2015*. Ostrava : VSB - Technical University of Ostrava, 2015, p. 555-559. ISBN 978-1-4673-6787-5. (in English)

14. DUBNIČKA, Roman. Regulation for energy labeling of LED lamps and luminaires. In *Slovalux 2015 : 4th Technical conference. Jasná, Slovak Republic, June 9-10, 2015*. Bratislava : SSTS, 2015, p. 120-128. ISBN 978-80-972014-7-0. (in Slovak)

15. DUBNIČKA, Roman. How to measure the quality of public lighting. In *Slovalux 2015 : 4th Technical conference. Jasná, Slovak Republic, June 9-10, 2015*. Bratislava : SSTS, 2015, p. 94-105. ISBN 978-80-972014-7-0. (in Slovak)

16. DUBNIČKA, Roman - LIPNICKÝ, Lukáš - GRINAJ, Lukáš - SZABÓ, Ferencz - CSUTI, Péter. Discharge luminaires correction of lidc measurement by means of goniophotometers with rotating luminaires. In *ELOSYS. Elektrotechnika, informatika a telekomunikácie 2015 : Trenčín, Slovakia, October 13 –15, 2015*. Bratislava : STU, 2015, CD-ROM, p. 71-75. ISBN 978-80-227-4437-9. (in English)

17. DUBNIČKA, Roman. Mesopic illuminance meter based on CCD fibbre-optics spectroradiometer. In *Lux junior 2015. Tagungsband Proceedings : 12. Internationales forum für den lichttechnischen nachwuchs. Dörnfeld bei Ilmenau, Germany. 25. bis 27. September 2015*. Ilmenau : Technische Universität Ilmenau, 2015, CD-ROM, [9] p. ISBN 978-3-927787-51-3. (in English)

18. DUBNIČKA, Roman. Influence of input parameters on results of photometric parameters at the calculation of lighting system design. In *Razsvetljava 2015 - Lighting engineering 2015 : 24th Intenational symposium lighting engineering. Preddvor, Slovenija. 8 - 9 October, 2015*. Maribor : Slovensko društvo za razsvetljavo/SDR, 2015, USB, p. 53-68. ISBN 978-961-93733-1-6. (in English)

19. DUBNIČKA, Roman - GAŠPAROVSKÝ, Dionýz - BARČÍK, Michal - LIPNICKÝ, Lukáš. Calculation of roadlighting photometric parameters under mesopic conditions. In *LIGHT-SVĚTLO 2015 : proceedings of the 21st International Conference. Brno, Czech Republic, 8-10 September 2015*. Brno : Brno University of Technology, 2015, USB, p. 173-176. ISBN 978-80-214-5244-2. (in English)

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22. DUBNIČKA, Roman - GAŠPAROVSKÝ, Dionýz - RADITSCHOVÁ, Jana - LIPNICKÝ, Lukáš. Disparity of photometric parameters of identical luminaires. In *Balkan light 2015 : The 6th Balkan conference on*

lighting. Athens, Greece. 16-19 September 2015. Athens : National Technical Universety of Athens, 2015, p. 441-444. ISBN 978-618-80348-2-2. (in English)

23. DUBNIČKA, Roman - GAŠPAROVSKÝ, Dionýz - LIPNICKÝ, Lukáš - RADITSCHOVÁ, Jana. Method of visual field analysis for investigation of mesopic vision conditions. In *Balkan light 2015 : The 6th Balkan conference on lighting. Athens, Greece. 16-19 September 2015*. Athens : National Technical Universety of Athens, 2015, p. 435-439. ISBN 978-618-80348-2-2. (in English)

24. DUBNIČKA, Roman - GAŠPAROVSKÝ, Dionýz - LIPNICKÝ, Lukáš - RADITSCHOVÁ, Jana - MÁCHA, Marek. Implementation of nanotechnology in optical parts of luminaires. In *Balkan light 2015 : The 6th Balkan conference on lighting. Athens, Greece. 16-19 September 2015*. Athens : National Technical Universety of Athens, 2015, p. 179-183. ISBN 978-618-80348-2-2. (in English)

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INSTITUTE OF ROBOTICS AND CYBERNETICS

http://www.urk.fei.stuba.sk/

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	Vice- Director for Teaching: *doc. Ing. Eva Miklovičová, PhD. (till February 28, 2015)* *doc. Ing. Jarmila Pavlovičová, PhD. (from March 1, 2015)*	
	Secretary:Mgr. Alena Foltinová	*Office:Beáta Hochschornerová*

GENERAL INFORMATION:

The Institute of Robotics and Cybernetics (IRC) is one of the top university institutes in Slovakia in the field of automation and control, industrial informatics, cybernetics and robotics. The Institute was established on March 1, 2006 by the integration of the former Department of Automation and Control and Department of Automatic Control Systems.

Till October 2015 IRC was a guarantor of the accredited study programmes: Industrial Informatics (BSc), Applied Informatics – the application domain Information Technologies in Control (BSc, MSc), Cybernetics (MSc), Robotics (MSc), Automation and Control (PhD) and Cybernetics (PhD). Since October 2015 IRC is the guarantor of the accredited study programmes Robotics and Cybernetics in all grades of study (BSc, MSc and PhD) in Slovak and English languages.

The basic research at IRC has been oriented to adaptive, robust and predictive control of complex systems, nonlinear control systems, soft computing methods in control, and recently also to network and robust hybrid control approaches. The main application areas are industrial robotics, service robotics based on various mobile platforms, robot-human interface, bio-cybernetics, power engineering, manufacturing, and process engineering.

Individual research teams prove their expertise by a rich publishing activity including international journals, monographs, and proceedings of the important world-wide international conferences (IFAC, IEEE, ECC etc.).

Departments of the Institute of Robotics and Cybernetics

Department of Robotics

Head of department   prof. Ing. Peter Hubinský, PhD

Department of Cybernetics

Head of department   prof. Ing. Ján Murgaš, PhD.

Department of Control Theory
Head of department   doc. Ing. Miroslav Halás, PhD.

Department of Information Technology
Head of department   Ing. Fedor Lehocki, PhD.

Department of Artificial Intelligence
Head of department   doc. Ing. Ivan Sekaj, PhD.

I. STAFF

Professors	Peter Hubinský, Ján Murgaš, Vojtech Veselý, Anton Vitko, Milan Žalman
Emeritus Professor	Ladislav Jurišica
Associate Professors	František Duchoň, Peter Fodrek, Miroslav Halás, Ján Kardoš, Zdenka Králová, Eva Miklovičová, Jarmila Pavlovičová, Ivan Sekaj
Assistant Professors	Andrej Babinec, Michal Blaho, Jozef Dorner, Mária Dúbravská, Jozef Dúbravský, Martin Ernek, Jaroslav Hanzel, Ľuboš Chovanec, Slavomír Kajan, Ladislav Körösi, Fedor Lehocki, Leo Mrafko, Tatiana Mudráková, Jana Paulusová, Peter Pásztó
Research Workers	Martin Dekan, Juraj Hnát, Tomáš Murgaš, Jozef Rodina, Daniel Skalický, Juraj Slačka, Stanislav Števo, Marián Tárník, Michal Tölgyessy, Jozef Vörös
Technical Staff	Radoslav Dibarbora, Alena Foltinová, Pavol Gašparovič, Beáta Hochschornerová (office), Katarína Horváthová, Andrea Semanová, Jozef Turčánik
PhD. Students	V. Bátora, P. Beňo, D. Quang Khanh, M. Florek, R. Goga, J. Kostroš, M. Loderer, Z. Mikulová, D. Pernecký, D. Rau, M. Rebro, M. Smoľák, R. Spielmann, M. Szabová, J. Šovčík
PhD. Students (external form)	Sz. Balogh, M. Beniak, J. Dorner, D. Hromada, B. Kadlic, T. Kasanický, J. Korcová, J. Kurilla, M. Maťuga, M. Mydliar, M. Paulus, J. Pristach, S. Štulrajterová, S. Triaška, M. Urban, P. Varga, I. Vargha

II. EQUIPMENT

II.1 Teaching and Research Laboratories

The National Robotics Engineering Centre (NREC) was established on April 2014.

The Equipment of the Centre

- Industrial robots ABB IRB 120 and IRB 4600
- OJ-10 - prototype of Slovak industrial robot used for welding
- Prototype of Slovak service robot MRVK created in cooperation with ZŤS VVÚ Košice
- BIPED - walking robot of bipedal type
- QUADROTOR - various types of flying robots
- iROBOT CREATE - development kits
- BLACK METAL - prototype of service robot used in indoor created in cooperation with ATEC s.r.o.
- INDUSTRIAL ROBOT KR-16 - robotized workplace created in cooperation with Kuka and Mia Engineering s.r.o.

-   HEXAPODs - hexapod type walking robots
-   GUĽKO - prototype of Slovak spherical robot
-   SEGWAY - prototype of Slovak segway type robot
-   LASER RANGEFINDERS
-   Geodetic localization system LEICA 1200+
-   Various visual systems (TIM 160, HDR camera, stereo)
-   Industrial robot Mitsubishi
-   Humanoid robot NAO
-   Robot LWA 4P 6KG 6DOF from company SCHUNK
-   Robot Androver
-   Force-torque sensors (OptoForce HEX-70-CE-2000N)

Other Laboratories

-   Schneider-Electric Laboratory
-   Continuous Process Control Laboratory
-   Laboratory of Network Technologies
-   Laboratory of Smart Rehabilitation Systems
-   Laboratory of Cybernetics
-   Multivariable Systems Laboratory
-   Laboratory of Flying Devices
-   Laboratory of Control Theory I, II
-   Laboratory of Operating Systems
-   Laboratory of Biocybernetics
-   Laboratory of Smart Servosystems
-   Laboratory of Motion Control Systems
-   Visual Systems Laboratory
-   Laboratory of Theoretical Robotics
-   Joint Laboratory of Robotics
-   Computational Laboratory of Artificial Intelligence

II.2 Special Software, Equipment and Tools

Special Software

-   Schneider Electric PLC/HMI software: PL7 Pro, Unity Pro, Twido Soft, Vijeo Designer, XBTL 1000, Vijeo Citec
-   Siemens PLC/HMI software: Simatic Step 7, Simatic Step 7 - Micro/WIN, TIA Portal, WinCC, WinCC Flexible
-   MATLAB, Maple, MS Visual Studio
-   Rockwell Automation (Allen-Bradley) PLC/HMI software: RSLogix 500, RSLogix5000, RSView, RSView Studio, RSEmulate 500, RSEmulate 5000, RSNetWorks (ControlNet, DeviceNet, EtherNet), RSSQL, RSTune, LogixArchitect, RsLinx
-   Ubuntu Linux+Octave, Scilab, Open Modelica, gcc, LLVM
-   Clinical Decision Intelligence for Mobile Devices, Mobile Diagnostic System
-   Lanner Group simulation software Witness

Special Equipment and Tools

-   Schneider Electric control systems: TSX Premium, TSX Micro, Twido, M340, TSX Quantum Hot Standby System
-   HMI: XBT-F. Fr. Inv.: ATV58, ATV71. Other: Inductel, Tego Power, Siemens HMI: Comfort panels.

- Fischertechnik industry models: 3-D-Robot TX, Conveyor belts, Indexed lines with two machining stations, Pneumatic Processing Centers, Punching machine with conveyor belt
- Laboratory models: thermal system, hydraulic systems, heat exchanger
- Siemens control systems: Siemens Simatic S7-200, S7-300, S7-400, S7-1200, S7-1500
- Sinamics S120, IWLAN Scalance W, Scalance X204IRT
- Lego NXT robot set, Building automation demonstration set (X10), Xbee communication set, Model of 2-axis positioner, Models of conveyors controlled over Profinet and IWLAN
- Rockwell Automation (Allen-Bradley) control systems: MicroLogix, CompactLogix, ControlLogix, SLC500, PLC5
- Allen Bradley Motor Drives, FLEX IIO Modules, Panel View Plus HMI
- Honeywell control systems: UDC3300, UDC2500
- Model of synchronous generator, ergometer, rehabilitation system based on linear motors, model of the plasma cutting machine
- Laboratory Models: Thermo-optical Model, Two-Tank System, DC Servo Drive System, Multivariable System with DC motors
- Helicopter Model, Thermo-Optical Model, Hydraulic systém
- Body Sensor Network, Universal Biosignal Monitoring Systém, Continuous Glucose Monitoring System
- HSM150+driver, DC motor+DCS600, AC motor+ACS800
- Portal crane, Tower crane, Juggler, Double Juggler, B&R APC 620 + ACOPOS 1016, Sinamics S 120, SIMOVERT
- iRobot Create robotic platforms, RPLIDAR 360° Laser Scanners, Single-board computers Raspberry Pi 2 Model B with display
- computer cluster

III. TEACHING

III.1 Undergraduate Study (Bc.)

Study Programme Industrial Informatics (Summer Semester 2015)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturers.

Computer Architecture	(2nd sem., 3-2h)	P. Fodrek
Modeling and Simulation in MATLAB	(2nd sem., 3-2h)	E. Miklovičová, J. Paulusová
Automatic Control Theory 2	(4th sem., 2-3h)	J. Murgaš
Cybernetics 2	(4th sem., 2-2h)	J. Murgaš, J. Paulusová
Java – Object Oriented Computer Programming	(4th sem., 2-2h)	I. Sekaj, M. Blaho
Automation 2	(6th sem., 2-2h)	M. Žalman, J. Dúbravský
Continuous Processes	(6th sem., 3-2h)	E. Miklovičová
Robotics	(6th sem., 3-2h)	P. Hubinský

Study Programme Robotics and Cybernetics (Winter Semester 2015)

Applied Mathematics	(3th sem., 2-2h)	M. Halás
Filtering and Signal Processing	(5th sem., 2-2h)	J. Pavlovičová
Information Systems in Health Care	(5th sem., 2-2h)	F. Lehocki
Control Systems	(5th sem., 2-2h)	A. Vitko, L. Körösi
Automatic Control Hardware	(5th sem., 2-2h)	M. Žalman, J. Dúbravský

Artificial Intelligence	(5th sem., 2-2h)	I. Sekaj
Production Systems	(5th sem., 2-2h)	F. Duchoň
Introduction to Automation	(5th sem., 2-2h)	E. Miklovičová, L. Mrafko

III.2 Graduate Study (Ing.)

Study Programmes Robotics, Cybernetics (Summer Semester 2015)

Adaptive Control	(2nd sem., 2-2h)	J. Murgaš, M. Tárník
Network technology 1	(2nd sem., 3-2h)	J. Murgaš, M. Blaho
Advanced Control Theory	(2nd sem., 3-2h)	J. Kardoš, J. Paulusová
Control Methods and Algorithms	(2nd sem., 3-2h)	J. Kardoš
Databases of Control Systems	(2nd sem., 3-2h)	Z. Králová, L. Körösi
Event Systems	(2nd sem., 3-2h)	A. Vitko
Evolutionary Algorithms in Management	(2nd sem. 3-2h)	I. Sekaj
Evolutionary Computing	(2nd sem., 3-2h)	I. Sekaj
Manufacturing Systems and CIM	(2nd sem. 3-2h)	F. Duchoň
Nonlinear Systems: Algebraic Approach	(2nd sem., 3-2h)	M. Halás
System Identification	(2nd sem., 3-2h)	E. Miklovičová
Control of Intelligent Buildings	(4th sem., 3-2h)	I. Sekaj
Intelligent Servosystems	(4th sem., 3-2h)	M. Žalman

Study Programme Robotics and Cybernetics (Winter Semester 2015)

Advanced Control Theory	(1th sem., 2-2h)	J. Kardoš, J. Paulusová
Artificial Intelligence 2	(1th sem., 2-2h)	I. Sekaj
Bio cybernetics	(1th sem., 2-2h)	Z. Králová, M. Tárník
Control of Mechatronic Systems	(1th sem., 2-2h)	P. Hubinský
Databases of Control Systems	(1th sem., 2-2h)	Z. Králová, L. Körösi
Event Systems	(1th sem., 2-2h)	A. Vitko
Network Control Systems	(1th sem., 2-2h)	J. Murgaš, L. Mrafko
Project Management	(3rd sem., 2-2h)	F. Lehocki
Systems Identification	(1th sem., 2-2h)	E. Miklovičová
Adaptive Control	(3th sem., 2-2h)	J. Murgaš, M. Tárník
Control of Industrial Robots	(3th sem., 2-2h)	A. Vitko
Embedded Control Systems	(3th sem., 2-2h)	P. Hubinský, J. Rodina
Mobile Robotic Systems	(3th sem., 2-2h)	F. Duchoň

III.3 Undergraduate Study (Bc.) Distance Learning Method

Study Programme Industrial Informatics (Summer Semester 2015)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturers.

| Computer Architecture | (2nd sem.) | P. Fodrek |

Automatic Control Theory 2	(4th sem.)	J. Murgaš
Java – Object Oriented Computer Programming	(6th sem.)	I. Sekaj, P. Fodrek
Network Technologies	(6th sem.)	E. Miklovičová, L. Mrafko
Robotics	(6th sem.)	P. Hubinský
Continuous Processes	(8th sem.)	E. Miklovičová
Industrial Communication Systems	(8th sem.)	M. Žalman

III.4 Graduate Study (Ing.) Distance Learning Method

Study Programme Robotics and Cybernetics (Winter Semester 2015)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturers.

Applied Mathematics	(5th sem.)	J. Paulusová, M. Dúbravská
Automatic Control Hardware	(5th sem.)	J. Dúbravský
Control Systems	(5th sem.)	L. Körösi
Filtering and Signal Processing	(5th sem.)	J. Pavlovičová
Information Systems in Health Care	(5th sem.)	F. Lehocki
Manufacturing Systems	(5th sem.)	F. Duchoň, A. Babinec

Study Programme Robotics (Winter Semester 2015)

Advanced Control Theory	(1st sem.)	J. Kardoš
Artificial Intelligence 2	(1st sem.)	I. Sekaj
Control of Mechatronic Systems	(1st sem.)	P. Hubinský
Event Systems	(1st sem.)	A. Vitko
Systems Identification	(1st sem.)	E. Miklovičová

IV. RESEARCH PROJECTS

IV.1 National Scientific Projects

- Research centre for severe diseases and related complications. ITMS 26240120038. Duration: 2014-2015 (F. Lehocki)
- Research of technological hubs of CNC cutting machines based on energy beam technologies. 0691/2015. Duration: 2015-2018 (P. Hubinský)
- New generation of interface for service robots teleoperatoric control. APVV-14-0894. Duration: 2015-2017 (F. Duchoň)
- Advanced methods of image processing used in visual systems and their implementation to the educational process, 003STU-4/2014. Duration: 2014-2016 (F. Duchoň)
- Research in the advanced methods of intelligent multi-axis motion control systems, focusing on mobile robotic manipulators, VEGA 1/0178/13. Duration: 2013-2015 (P. Hubinský)
- Research of the service robot control with dual visual perception, APVV-0539-11. Duration: 2012-2015 (F. Duchoň)

- Control systems for energy beam cutting centres, APVV-0504-12. Duration: 2013-2015 (A. Vitko)
- Application of algebraic methods to nonlinear control systems, VEGA 1/0276/14. Duration: 2014-2017 (M. Halás)
- Education innovation in digital image processing, biometrics, machine learning and neural networks, 010STU-4/2014. Duration: 2014-2016 (J. Pavlovičová)
- Modern methods for network control systems, VEGA 1/2256/12. Duration 2012-2015 (J.Murgaš)
- Advanced methods of robust and optimal control. VEGA 1/1241/12 Duration 2012-2015 (V. Veselý)
- ClouDiaDAQ (Diabetic Data Acquisition via Cloud). 2014et004. Duration: 1.4.2015-31.12.2015 (M. Tárník)
- Localization of quadrocopter using visual system. 2014et013. Duration: 1.1.2015-30.11.2015 (M. Florek)

V. COOPERATION

V.1 International Cooperation

- Czech Technical University in Prague, Czech Republic
- Brno University of Technology, Czech Republic
- Technical University of Ostrava, Czech Republic
- Humusoft Inc, Praha, Czech Republic
- Red Hat Czech, Brno, Czech Republic
- Chinese University of Hong Kong, People's Republic of China
- Institute of Cybernetics at Tallinn University of Technology, Tallinn, Estonia
- Institute de Recherché en Communications et Cybernétique, C.N.R.S., Nantes, France
- DLR – Institute of Robotics and Mechatronics, Germany
- Schneider Electric, Germany
- Budapest University of Technology and Economics, Budapest, Hungary
- Óbuda University, Hungary
- Technical University of Ancona, Italy
- Kyoto University, Kyoto, Japan
- InterOceanMetal, Poland
- Polytechnic University of Timisoara, Romania
- Arzamas Polytechnic Institute of Nizhny Novgorod, State Technical University, Russia
- Russian Academy of Sciences
- Texas Institute of Science, USA
- University of Houston, Texas, U.S.A.
-

V.2 Cooperation in Slovakia

- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Technical University of Košice
- University of Žilina
- Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Bratislava
- ControlTech, Trnava
- First Welding Company, Bratislava
- HMH, Bratislava
- Legrand, Slovakia
- MicroStep, Bratislava
- PPA Controll, Bratislava
- Rockwell Automation, Bratislava
- Samsung Electronics Slovakia, Galanta
- Schneider Electric Slovakia, Bratislava
- Siemens, Bratislava
- Slovak Electricity Transmission System, Bratislava
- Volkswagen Slovakia, Bratislava

- Vonsch, Brezno
- AerobTec, Bratislava
- AGI, Trenčín
- eTechnology, Hlohovec
- KUKA Roboter CEE GmbH
- Matador Industries, Dubnica nad Váhom
- MIA Engineering, Dubnica nad Váhom
- Mountain Rescue Service Slovakia, Centre for Avalanche Prevention
- Neulogy, Bratislava
- Research and Development Centre AUTOMOTIVE, Dubnica n. Váhom
- Robotika SK, Bratislava
- SCHUNK Intec, Nitra
- SICK, Bratislava
- SMC Industrial Automation, Teplička nad Váhom
- UAVONIC, Bratislava
- ZTS VVU, Košice
- Anext, Bratislava
- IBM Slovensko, Bratislava
- Medirex, Bratislava
- Novartis Slovakia, Bratislava

VI. THESES

VI.1 Masters Theses

Masters theses defended at the Institute of Robotics and Cybernetics. The names of supervisors are in brackets.

Alumni Cybernetics, June 2015

- Beňo Tomáš: Design of boiler control (A. Kozáková, Institute of Automotive Mechatronics)
- Dziak Lukáš: Process control with PLC Simatic (P. Drahoš, Institute of Automotive Mechatronics)
- Gubánová Katarína: Simulation Experiments for Diabetic Education (M. Tárník)
- Hrušovský Tomáš: Predictive PID control (E. Miklovičová)
- Morvay Michal: Service HMI (L. Körösi)
- Rebro Matúš: Automated insulin administration (M. Tárník)
- Vajs Tomáš: Predictive methods of control (J. Paulusová)
- Varga Štefan: Virtual laboratory of control dynamic systems (P. Bisták)
- Vaško Ján: Collection and visualization of data from sensor network (M. Blaho)

Alumni Robotics, June 2015

- Balogh Szabolcs: Simulated industrial regulator (L. Körösi)
- Bartusek Róbert: Technology of FDT/DTM (L. Körösi)
- Baxa Tomáš: Workplace design with 6 axis robot guided by 3D camera (T. Mudráková)
- Belica Peter: Multi-Axis positioning with Profinet (L. Mrafko)
- Benčič Ján: Control of moving opened container with liquid (P. Hubinský)
- Blaženák Lukáš: Design of adaptive servo system with position control (M. Žalman)
- Bubniak Patrik: Optimal drive control with control systems (L. Körösi)
- Écsy Dávid: Electromechanical jack for automobiles (V. Goga)
- Gallo Vladimír: Assisting robots for intelligent buildings (F. Duchoň)
- Gašparovski Viktor: Control design of sphere robot (P. Hubinský)
- Gubán Andrej: Rotation speed measuring device (J. Dúbravský)
- Hammad Amir: Hand-tracking and gesture classification using Kinect (S. Kajan)

- Hlavatovič Marek: Exploitation of Force-Torque sensor for guidance and learning industrial manipulators (A. Babinec)
- Holka Peter: Modern methods used for control linear servodrive using elements of artificial intelligence (T. Mudráková)
- Hrmo Martin: The use of visual system in ROS (P. Pásztó)
- Ivančin Ivan: Biometric sensor system with wireless transfer of data (J. Murgaš)
- Jablonický Jozef: Control of hydraulic system (P. Ťapák, Institute of Automotive Mechatronics)
- Körmendy Peter: Parabolic solar collector with automatic inching towards sun (A. Babinec)
- Kusý Roman: Intelligent temperature control in the building (P. Drahoš, Institute of Automotive Mechatronics)
- Lietavec Lukáš: Model of spherical robot (P. Hubinský)
- Ližičiar Marek: Determining the location of mobile robots in formation (P. Hubinský)
- Lojek Tomáš: Remotely controlled exploratory robot system (J. Hanzel)
- Machovský Andrej: Linear autonomous control based on computed torque method (A. Vitko)
- Mikulová Zuzana: Localization of mobile robot using visual system (F. Duchoň)
- Pavlovič Peter: Cyber security (L. Körösi)
- Pavol Miroslav: Creating the control system by code generating (M. Blaho)
- Rafay Peter: Robust control of 2-DOF robot with VSS observer (J. Kardoš)
- Rajský Dominik: Navigation of mobile robot using visual system (P. Pásztó)
- Sliva Martin: Monitoring variables in the electric network (M. Ernek)
- Suchý Daniel: Robust controller design for 3D laboratory model of crane crab (M. Hypiusová)
- Szabová Martina: Localization of a mobile robot using GNSS systems by the means of artificial intelligence (F. Duchoň)
- Štipčák Peter: Use of industrial robot and camera system for sorting parts (A. Babinec)
- Trubač Ondrej: AMAV/Segway two-wheeled mobile robot (F. Rodina)
- Uhrín Matúš: Tracking antenna for unmanned aerial vehicles (R. Balogh, Institute of Automotive Mechatronics)
- Vívodik Martin: Wireless sensor network security (M. Blaho)
- Vondráček Martin: Multiagent system in mobile robotics (F. Duchoň)

Alumni Robotics, June 2015 (Distance Learning Method)

- Chovanec Jozef: Control of mobile robot with visual system (J. Hanzel)
- Pavelka Vladimír: Navigation of a mobile robot in a map created with RGBD camera (F. Duchoň)
- Rubint Stanislav: Automated measuring workplace with tensometers (J. Šturcel, Institute of Automotive Mechatronics)
- Vanko Miroslav: Position control design for linear servo drive Siemens (T. Mudráková)

VI.2 PhD Theses

Automation and Control

- Jarčuška M.: Positioning system design of the radial magnetic bearing (M. Žalman)
- Škrlec, I.: Nonlinear control of AC drives for energy-beam CNC cutting machines (M. Žalman)
- Slačka J.: Onboard computer of Slovak CubeSat satellite (M. Halás)

Cybernetics

- Ottinger I.: Adaptive algorithms for artificial pancreas (J. Murgaš)
- Ludwig T.: Biocybernetic models of type 1 diabetes mellitus (E. Miklovičová)
- Ilka A.: Gain-scheduled controller design (V. Veselý)
- Ciba M.: Design of optimization algorithms on ant colony simulation basis (I. Sekaj)

VI.3 Achievements of students

- Juraj Slačka - Commemorative sheet of Saint Gorazd for the doctoral dissertation "Onboard computer of Slovak CubeSat satellite". The award was granted by the Ministry of Education, Science, Research and Sport of the Slovak Republic
- Adrian Ilka - The best paper of the section Mechatronics and Automation at 17th Conference of Doctoral Students ELITECH '15, Bratislava

VII. OTHER ACTIVITIES

VII.1 Conferences and events organized or co-organized by the Institute, membership in committees

- Istrobot: Competition of Mobile Robots, Bratislava, April 2015 (P. Hubinský, M. Dekan, J. Rodina, J. Slačka - Jury members)
- 2nd IEEE EMBS Summer School on Emerging Technologies and Application in Telemedicine, Smolenice (F. Lehocki)
- 8th IFAC Symposium on Robust Control Design, Bratislava 2015 (V. Veselý - IPC member)
- IEEE Region 8 EuroCon – EUROCON 2015, Int. Conf. on Circuits and Systems, Multimedia,Information and Communication Technology and Power Systems (Pavlovičová-PC member)
- Redžúr 2015 – 9th International Workshop on Multimedia and Signal Processing, (Pavlovičová-PC member)
- CLAWAR Conference 2015, HangZhou, China (A. Vitko – PC member)
- 4th International Conference on Connected Vehicles and Expo 2015, Shenzhen, China (F. Lehocki - TPC member)
- ELOSYS 2015, Trenčín (J. Murgaš, M. Blaho - PC members)
- International Conference Technical Computing Bratislava 2015 (T. Mudráková, M. Blaho - PC members)
- 17th Conference of Doctoral Students ELITECH`15 (E. Miklovičová, I. Sekaj - PC members, M. Tárník - OC member)

VII.2 Membership in Editorial Boards and Committies

- AT&P Journal (L. Jurišica, J. Murgaš, V. Veselý, M. Žalman – Editorial Board members)
- Journal of Electrical Engineering (V. Veselý – member of Editorial Board)
- Selected Topics in Modeling and Control (V. Veselý – Editor, L. Jurišica – Editorial Board member)
- Transactions of the Institute of Measurement and Control (A. Vitko – associate editor)
- Cooperation with Encyclopaedic Institute of the Slovak Academy of Sciences on Encyclopaedia Beliana - Lexical Group Cybernetics: (L. Harsányi, L. Jurišica, M. Žalman)

VII.3 Other Activities

- National Robotics Engineering Centre, civic assoc. (F. Duchoň, P. Hubinský, J. Murgaš, J. Rodina, M. Tölgyessy, Ľ. Chovanec, M. Dekan, P. Pásztó, A. Babinec - members)
- The potential of cooperation with public research organizations - an invited lecture within a workshop System Support for Automation, Robotics and Digital Technologies at the Slovak Innovation and Energy Agency (F. Duchoň)
- Software developing for the first slovak satellite skCube (J. Slačka as a member of SOSA - Slovak Organization for Space Activities)
- Computer Viruses Analysis ESET Ltd. Bratislava (P. Hubinský)
- Administration of Shareware Archive of Slovak Antivirus Centre (P. Hubinský)
- Schneider-Electric Courses, Automation and Control Systems (L. Körösi)

VIII. AWARDS, MEMBERSHIPS IN INSTITUTIONS AND COMMITTEES

VIII.1 Awards

- F. Duchoň et al.: winner of the Tech Transfer Award Slovakia 2015 in the category The best innovator approach to technology transfer
- F. Duchoň et al.: TOP 3 in the category Innovation with the highest potencial for the application in practice (within Tech Transfer Award Slovakia 2015)

VIII.2 Membership in International Institutions/Committees

- Local Steering Committee within a project REinEU 2016 - Re-Industrialisation of the Europian Union (F. Duchoň)
- Association for Computing Machinery (P. Fodrek)
- IEEE Computer Society (P. Fodrek)
- IEEE Engineering in Medicine & Biology Society (F. Lehocki)
- IEEE Institute of Electrical and Electronics Engineers, Inc. (M. Žalman, J. Murgaš, V. Veselý)
- IEEE Robotics & Automation Society (A. Babinec, M. Blaho, F. Duchoň, P. Fodrek, P. Hubinský, Ľ. Chovanec, L. Körösi, E. Miklovičová, T. Mudráková, J. Murgaš, J. Rodina, M. Tárník – members)
- IEEE Young Professionals (A. Babinec - member)
- IEE Institute of Electrical Engineers, Inc. (M. Žalman, P. Hubinský)
- IFAC Technical Committee: TC 1.2 Adaptive and Learning Systems (J. Murgaš)
- IFAC Technical Committee: TC 2.3 Nonlinear Control Systems (M. Halás)
- IFAC Technical Committee: TC 2.5 Robust Control (V. Veselý)
- IFAC Technical Committee: TC 4.3 Robotics (P. Hubinský)
- IFAC Coordinating Committee CC4 Mechatronics, Robotics and Components (P. Hubinský)
- Association for Computing Machinery (P. Fodrek - member)
- CLAWAR – Climbing and Walking Robots Association (A.Vitko)
- IMEKO -International Measurement Confederation, TC 17 - Technical Committee on Robotics (A. Vitko)

VIII.3 Membership in National Institutions/Committees

- Accreditation Commission - an advisory body to the Government, Working Group Research 16 (L. Jurišica, J. Murgaš)
- working group Information and communication technologies at the Ministry of Education, Science, Research and Sport of the Slovak Republic (F. Duchoň)
- Main Committee of the Slovak Society for Cybernetics and Informatics at the Slovak Academy of Sciences (V. Veselý – vice-chair, L. Jurišica, J. Murgaš, M. Žalman, I. Sekaj - members)
- Slovak Organization for Space Activities (J. Slačka)

IX. PUBLICATIONS

Books

1. DUCHOŇ, František. *Manufacturing systems and CIM*. 1. ed. Bratislava : STU Publishing house, 2015. 311 p. ISBN 978-80-227-4446-1. (in Slovak)
2. DUCHOŇ, František - BABINEC, Andrej. *Location of mobile robots*. 1. ed. Bratislava : STU Publishing house, 2015. 121 p. ISBN 978-80-227-4461-4. (in Slovak)

3. LUDWIG, Tomáš - TÁRNÍK, Marián. *Biocybernetic models of diabetes*. 1. ed. Bratislava : Felia, 2015. 119 p. ISBN 978-80-971512-8-7. (in Slovak)
4. OTTINGER, Ivan - TÁRNÍK, Marián. *Adaptice control for artifical pancreas*. 1. ed. Bratislava : Felia, 2015. 109 p. ISBN 978-80-89824-00-7. (in Slovak)
5. VESELÝ, Vojtech - HARSÁNYI, Ladislav. *Robust control. Aplications*. 1. ed. Bratislava : STU Publishing house, 2015. 222 p. ISBN 978-80-227-4339-6. (in Slovak)
6. VESELÝ, Vojtech - ROSINOVÁ, Danica - KOZÁKOVÁ, Alena. *Robust Controller Design*. 1. ed. Bratislava : Felia, 2015. 294 p. ISBN 978-80-971512-6-3. (in English)

Parts of Books

1. ERNEK, Martin - MURGAŠ, Ján. Simulation analysis of prepared power plant model dynamics. In *Technical Computing Bratislava 2014 : Proceedings*. 1. ed. Saarbrücken : LAP LAMBERT Academic Publishing, 2015, p. 105-116. ISBN 978-3-659-40792-5. (in English)
2. KÖRÖSI, Ladislav - PAULUSOVÁ, Jana. Modified neural network structure imlementation in PAC. In *Technical Computing Bratislava 2014 : Proceedings*. Saarbrücken : LAP LAMBERT Academic Publishing, 2015, p. 174-187. ISBN 978-3-659-40792-5. (in English)
3. SLAČKA, Juraj - PETRÍK, Slavomír - HALÁS, Miroslav. Embedded RTOS for cubesats. In *Technical Computing Bratislava 2014 : Proceedings*. Saarbrücken : LAP LAMBERT Academic Publishing, 2015, p. 188-198. ISBN 978-3-659-40792-5. (in English)
4. VARGHA, Imrich - ŽALMAN, Milan - MUDRÁKOVÁ, Tatiana. Design and realization of gantry stage motion control system of cutting machine. In *Technical Computing Bratislava 2014 : Proceedings*. Saarbrücken : LAP LAMBERT Academic Publishing, 2015, p. 224-235. ISBN 978-3-659-40792-5. (in English)

Journals

1. BENICKÝ, Peter - JURIŠICA, Ladislav - VITKO, Anton. Motion data preprocessing in robotic applications. In *Journal of Control Engineering and Applied Informatics*. Vol. 17, No. 1 (2015), p. 3-11. ISSN 1454-8658. (in English)
2. ILKA, Adrian - OTTINGER, Ivan - LUDWIG, Tomáš - TÁRNÍK, Marián - VESELÝ, Vojtech - MIKLOVIČOVÁ, Eva - MURGAŠ, Ján. Robust controller design for T1DM individualized model: gain-scheduling approach. In *International Review of Automatic Control*. Vol. 8, No. 2 (2015), p. 155-162. ISSN 1974-6059. (in English)
3. KOHÚT, Miroslav - BARTOŠOVIČ, Matej - DOBIŠ, Michal - DUCHOŇ, František - BABINEC, Andrej. Starting with ROS (1). In *ATP Journal*. Vol. 22, Iss. 12 (2015), p. 32-35. ISSN 1335-2237. (in Slovak)
4. MURGAŠ, Ján - ERNEK, Martin. Modern glycemic control. In *Transfer*. Vol. 7, Iss. 2 (2015), p. 14-15. ISSN 1337-9747. (in Slovak)
5. MURGAŠ, Ján. Biocybernetics is the future of cybernetics. In *Posterus*. Vol. 8, Iss. 11 (2015), online, [6] p. ISSN 1338-0087. (in Slovak)
6. RAU, Dávid - RODINA, Jozef - PALKOVIČ, Lukáš - HUBINSKÝ, Peter. Sensorless field oriented control of BLDC motors for MAVs. In *Transactions on Electrical Engineering*. Vol. 4, No. 4 (2015), p. 91-96. ISSN 1805-3386. (in English)

7. ŠOVČÍK, Ján - KAJAN, Martin - SMOLÁK, Martin - FLOREK, Martin - HUBINSKÝ, Peter - LIŽIČIAR, Marek. Ultrasonic localization of multiple robots. In *International Journal of Robotics and Automation Technology*. Vol. 2, No. 2 (2015), p. 65-72. ISSN 2409-9694. (in English)

8. TÁRNÍK, Marián - LUDWIG, Tomáš. TIDM simulator individualization: part 1. In *Posterus*. Vol. 8, Iss. 4 (2015), online, [11] p. ISSN 1338-0087. (in Slovak)

9. TÁRNÍK, Marián - LUDWIG, Tomáš. TIDM simulator individualization: part 2. In *Posterus*. Vol. 8, Iss. 5 (2015), online, [12] p. ISSN 1338-0087. (in Slovak)

10. TÁRNÍK, Marián - BÁTORA, Vladimír - LUDWIG, Tomáš - OTTINGER, Ivan - MIKLOVIČOVÁ, Eva - MURGAŠ, Ján. Prediction of glycemia based on diabetes self-monitoring data. In *International Review of Automatic Control*. Vol. 8, No. 2 (2015), p. 113-119. ISSN 1974-6059. (in English)

11. VESELÝ, Vojtech - ILKA, Adrian. Robust gain-scheduled PID controller design for uncertain LPV systems. In *Journal of Electrical Engineering*. Vol. 66, Iss. 1 (2015), p. 19-25. ISSN 1335-3632. (in English)

12. VESELÝ, Vojtech - ILKA, Adrian. Design of robust gain-scheduled PI controllers. In *Journal of the Franklin Institute*. Vol. 352, No. 4 (2015), p. 1476-1494. ISSN 0016-0032. (in English)

13. VESELÝ, Vojtech - ILKA, Adrian. Unified robust gain-scheduled and switched controller design for linear continuous-time systems. In *International Review of Automatic Control*. Vol. 8, No. 3 (2015), p. 251-259. ISSN 1974-6059. (in English)

14. VESELÝ, Vojtech. Robust switched controller design for linear continuous-time systems. In *Archives of Control Sciences*. Vol. 25, No. 4 (2015), p. 401-416. ISSN 1230-2384. (in English)

15. VESELÝ, Vojtech - VOZÁK, Daniel. Robust model predictive controller design: Finite and infinite horizon. In *Journal of Mathematics and System Science*. Vol. 5, (2015), p. 449-458. ISSN 2159-5291. (in English)

16. VITKOVÁ, Zuzana - OREMUSOVÁ, Jarmila - HERDOVÁ, Petra - VITKO, Anton - IVÁNKOVÁ, Oľga. Model Based Approach to Study of Release Kinetics of the Drug Chlorhexidine from Hydrogels. In *Tenside surfactants detergents*. Vol. 52, Iss. 1 (2015), p. 67-72. ISSN 0932-3414. (in English)

17. VÖRÖS, Jozef. Iterative identification of nonlinear dynamic systems with output backlash using three-block cascade models. In *Nonlinear Dynamics*. Vol. 79, No. 3 (2015), p. 2187-2195. ISSN 0924-090X. (in English)

18. VÖRÖS, Jozef. Modeling and identification of discrete-time nonlinear dynamic cascade systems with input hysteresis. In *Mathematical Problems in Engineering*. Vol. 2015, (2015), Art. ID 393572, [8] p. ISSN 1024-123X. (in English)

19. VÖRÖS, Jozef. Identification of nonlinear cascade systems with output hysteresis based on the key term separation principle. In *Applied Mathematical Modelling*. Vol. 39, No. 18 (2015), p. 5531–5539. ISSN 0307-904X. (in English)

Conference Proceedings

1. BÁTORA, Vladimír - TÁRNÍK, Marián - MURGAŠ, Ján - SCHMIDT, Signe - NORGAARD, Kirsten - POULSEN, Niels Kjolstad - MADSEN, Henrik - JORGENSEN, John Bagterp. Bihormonal control of blood glucose in people with type 1 diabetes. In *ECC 2015 : European Control Conference. Linz, Austria. July 15-17, 2015*. EUCA, 2015, p. 25-30. ISBN 978-3-9524269-4-4. (in English)

2. BÁTORA, Vladimír - TÁRNÍK, Marián - MURGAŠ, Ján - SCHMIDT, Singe - NORGAARD, Kirsten - POULSEN, Niels Kjolstad - MADSEN, Henrik - BOIROUX, Dimitri - JORGENSEN, John Bagterp. The contribution of glucagon in an artificial pancreas for people with type 1 diabetes. In *American control conference 2015 : Chicago, USA. July 1-3, 2015*. AACC, 2015, p. 5097-5102. ISBN 978-1-4799-8686-6. (in English)

3. BISTÁK, Pavol - HALÁS, Miroslav. Practical implementation of trajectory tracking problem for coupled tanks. In *IN-TECH 2015 : Preceedings of the International conference on innovative technologies. Dubrovnik, Croatia. 09.-11.09.2015*. Rijeka : Engineering University of Rijeka, 2015, p. 146-149. ISSN 1849-0662. (in English)

4. BOIROUX, Dimitri - BÁTORA, Vladimír - HAGDRUP, Morten - ARADÓTTIR, Tinna Björk - JOHANNSEN, Caroline - TÁRNÍK, Marián - MURGAŠ, Ján - SCHMIDT, Singe - NORGAARD, Kirsten - POULSEN, Niels Kjolstad - MADSEN, Henrik - JORGENSEN, John Bagterp. A continuous-discrete extended kalman filter for state and parameter estimation in people with type 1 diabetes. In *19th Nordic process control workshop : Trondheim, Norwege. January 13-16, 2015*. Trondheim : NTNU, 2015, online, [1] p. (in English)

5. BOIROUX, Dimitri - BÁTORA, Vladimír - HAGDRUP, Morten - WENDT, S. L. - SCHMIDT, Singe - NORGAARD, Kirsten - POULSEN, Niels Kjolstad - MADSEN, Henrik - JORGENSEN, John Bagterp. Bi-hormonal closed-loop control of blood glucose for people with type 1 diabetes - The diacon project. In *Diabetes technology and therapeutics : 8th international conference on advanced technologies and treatments for diabetes. Paris, France, February 18-25, 2015*. Vol. 17, No. 1 (2015), p. A-107. ISSN 1520-9156. (in English)

6. BOIROUX, Dimitri - BÁTORA, Vladimír - HAGDRUP, Morten - TÁRNÍK, Marián - MURGAŠ, Ján - SCHMIDT, Signe - NORGAARD, Kirsten - POULSEN, Niels Kjolstad - MADSEN, Henrik - JORGENSEN, John Bagterp. Comparison of prediction models for a dual-hormone artificial pancreas. In *IFAC-PapersOnLine*. Vol. 48, No. 20 (2015), p. 7–12. ISSN 2405-8963. (in English)

7. BORBÉLY, Richard - BLAHO, Michal - MRAFKO, Leo - MUDRÁKOVÁ, Tatiana. Digits recognition with beagleboard platform. In *Technical computing Prague 2015. Prague, Czech Republic, 4.11. 2015*. Prague : University of Chemistry and Technology, 2015, CD-ROM, [6] p. ISBN 978-80-7080-936-5. (in English)

8. BOŠANSKÝ, Jozef - BLAHO, Michal - MRAFKO, Leo - MUDRÁKOVÁ, Tatiana. Pattern recognition with raspberry PI platform. In *Technical computing Prague 2015. Prague, Czech Republic, 4.11. 2015*. Prague : University of Chemistry and Technology, 2015, CD-ROM, [7] p. ISBN 978-80-7080-936-5. (in English)

9. BUCZ, Štefan - KOZÁKOVÁ, Alena - VESELÝ, Vojtech. Robust PID controller design for performance based on ultimate plant parameters. In *IFAC-PapersOnLine : 8th IFAC Symposium on Robust Control Design ROCOND 2015. Bratislava, Slovakia. 8-11 July 2015*. Vol. 48, No. 14 (2015), p. 388–395. ISSN 2405-8963. (in English)

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14. HAFFNER, Oto - KRÁLOVÁ, Zdenka. Simulation analysis of a real small production process. In *ICCC 2015 : 16th International Carpathian Control Conference. Szilvásvárad, Hungary. May 27-30, 2015*. Danvers : IEEE, 2015, p. 153-158. ISBN 978-1-4799-7369-9. (in English)

15. HALÁS, Miroslav - BISTÁK, Pavol. Modeling and identification of coupled tanks. In *IN-TECH 2015 : Preceedings of the International conference on innovative technologies. Dubrovnik, Croatia. 09.-11.09.2015*. Rijeka : Engineering University of Rijeka, 2015, p. 162-165. ISSN 1849-0662. (in English)

16. HREČKO, Lukáš - SLAČKA, Juraj - HALÁS, Miroslav. Bicopter stabilization based on IMU sensors. In *Process control 2015 : 20th International Conference on Process Control. Štrbské Pleso, Slovak Republic. June 9-12, 2015*. IEEE, 2015, p. 192-196. ISBN 978-1-4673-6627-4. (in English)

17. HYPIUSOVÁ, Mária - KAJAN, Slavomír - KOZÁK, Štefan. Robust MIMO control for interconnected DC motors. In *IFAC-PapersOnLine : 8th IFAC Symposium on Robust Control Design ROCOND 2015. Bratislava, Slovakia. 8-11 July 2015*. Vol. 48, No. 14 (2015), p. 402–407. ISSN 2405-8963. (in English)

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Patents and Standards

1. PALKOVIČ, Lukáš - RODINA, Jozef - KOSTROŠ, Juraj - HUBINSKÝ, Peter - HUBINSKÝ, Ľudovít. *Rotation cleaning of tool using friction gear*. *Utility model no. 7126*. Mediation date: 5.5.2015. 4 p. (in Slovak)

INSTITUTE OF TELECOMMUNICATIONS

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GENERAL INFORMATION

The main objective of the Institute of Telecommunications is to integrate and in a procreative way evolve content-related educational, scientific, research, experimental and other professional activities. The IT provides education within the scope of accredited educational programs offered at the Slovak University of Technology. By means of educational, scientific, research, experimental and other professional activities, the Institute of Telecommunications is responsible for development of following areas: Multimedia Information and Communication Technologies, Telecommunication Systems, Networks and Services, Multimedia and Signal Processing.

Telecommunications is a key part of ICT and this professional area has been developed dramatically. Rapid changes and evolution predict new forms of educational process based on *student centric model* and e-learning. Students graduated in Telecommunications are equipped with skills and knowledge for problem solving not only in the area which predetermine them for high quality employment in Slovakia and abroad. The pedagogical activity of the Institute of Telecommunications involves the bachelor degree program (Bc.), the master degree program (MSc. / Ing.), the doctoral degree program (PhD.) and life-long learning program. Extraordinary activities are devoted to the modernisation of secondary education. Several EU projects with active participation of IT have been introduced successfully to secondary grammar and vocational schools to support modern form of education and development of study materials.

The Institute of Telecommunications aims at sustaining its position as a major centre of science and research. Academic staff of the IT participates as members in many expert technical committees. IT has been a partner of various international research & innovations projects based on long-term international partnerships and reputation. IT has become a partner of new HORIZON2020 project NEWTON oriented to modern method of education based on ICT. The IT actively supports a development and a popularization of new telecommunication technologies by organizing and co-organizing of international conferences and workshops. A quantity of valuable scientific publications in foreign and national scientific and professional journals and in proceedings from significant international scientific conferences shows evidence of the high professional level of the IT FEI STU members.

Departments of Institute of Telecommunications

Multimedia Processing
Department chair: Ing. Renáta Rybárová, PhD.
Switching Systems
Department chair: doc. Ing. Martin Medvecký, PhD.
Transmission Systems
Department chair: prof. Ing. Peter Farkaš, DrSc.

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II. EQUIPMENT

II.1 Teaching and Research Laboratories

- Audioacoustical Laboratory
- E-learning Multimedia Laboratory
- Laboratory of Data Transmission
- Laboratory of Digital Signal Processing
- Laboratory of Next Generation Networks (NGN Lab)
- Laboratory of Multimedia Communication (MMC Lab)
- Laboratory of Telecommunications Management Network
- Laboratory of Telecommunications Technology (Optical SDH, RWS)
- Smart Room Lab (Home Automation Testbed platform)

- Virtual Laboratory for the Optical Transmission Medium

II.2 Special Measuring Instruments and Computers

- Optical Network (SDH – STM, 155 Mbit/s)
- Multiplexor NORTEL S/DMS 1X (16 x 2,048 Mbit/s)
- IMS platform ALCATEL – LUCENT (Center of Exellence)
- Laboratory NGN PABX OXO Communication Server
- Private Telecommunication System ALCATEL OXE
- Testing System for Delay in IP Networks: CISCO routers 1800 and SW IxChariot®
- FWA system (26 GHz) - VoIP via Benestra
- FWA system (3,7 GHz) - VoIP and High Speed Internet via GTS Slovakia
- Broadband experimental data network (10 Gbit/s)
- NGN platform for Testbeds and Interconnects
- Telecommunications Videoconference Systems
- Measuring set Wandel and Goltermann IBT 10 (for ISDN interface S0 and U)
- Siemens Node Integrator – Software for Simulation of TMN
- Measuring set Siemens - Carrier Frequency Level Test (Set W2008-K/D2008-K)
- Logic Analyzer Philips PM 3570
- Telecommunications Instructional Teaching Modelling System TIMS-301
- Spectral analyzer HP 3589A
- CAN analyzer CANLAB
- IQ Kiosk
- USRP N210

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Subject	Semester, hours	Lecturer
Logic Systems	(1st sem., 2-2h)	M. Medvecký
Communication and Information Networks	(3rd sem., 2-2h)	E. Cromý
Project Planning and Management	(3rd sem., 2-2h)	M. Orgoň
Telecommunication Technologies	(4th sem., 3-2h)	M. Orgoň
Communication and Information Networks	(4th sem., 3-2h)	M. Halás
Communication Systems	(4th sem., 3-1h)	M. Rakús
Digital Communications	(4th sem., 3-2h)	P. Farkaš
Digital Communications II	(5th sem., 2-2h)	P. Farkaš
IPv6 and Internet of Things	(5th sem., 2-2h)	T. Páleník
Analog and Digital Signal Processing I	(5th sem., 2-2h)	R. Vargic
Multimedia 1	(5th sem., 2-2h)	G. Rozinaj
Multimedia Telecommunication Networks and Services	(5th sem., 2-2h)	I. Baroňák
Metallic and Optical Transmission Media	(5th sem., 2-2h)	R. Róka
Analog and Digital Signal Processing II	(6th sem., 3-2h)	J. Kačur
Digital Transmission Systems and Networks	(6th sem., 3-2h)	R. Róka
Switching Systems I	(6th sem., 3-2h)	I. Baroňák

III.2 Graduate Study (Ing.)

Digital Signal Processing	(1st sem., 2-2h)	G. Rozinaj
Wireless Communications	(1st sem., 2-2h)	P. Farkaš
Video Coding and Transmission	(1st sem., 2-2h)	J. Polec, K. Kotuliaková
Integration of Digital Networks and Services	(2nd sem., 3-2h)	E. Chromý
Probabilistic Models in Telecommunications	(2nd sem., 3-2h)	J. Polec, K. Kotuliaková
Mobile and Satellite Communications III	(2nd sem., 3-2h)	P. Farkaš, M. Turcsány
Aplications of smart terminals	(3rd sem., 2-2h)	T. Páleník
Security of Communication Networks and Services	(3rd sem., 2-2h)	M. Orgoň
Designing of Wireless Telecommunication Networks	(3rd sem., 2-2h)	M. Rakús
Digital Image Processing	(3rd sem., 2-2h)	J. Polec
Digital Speech Processing	(3rd sem., 2-2h)	J. Kačur
Optical Communication Systems and Networks	(1st + 3rd sem., 2-2h)	R. Róka
Private Telecommunication Networks and Services	(3rd sem., 2-2h)	I. Baroňák
Telecommunication Legislative	(3rd sem., 2-3h)	I. Baroňák
Telecommunication Networks Management	(3rd sem., 2-2h)	M. Medvecký
Advanced Methods of Image and Video Processing	(3rd sem., 2-2h)	R. Vargic
Software Development in Telecommunications	(1st + 3rd sem., 2-2h)	R. Vargic

III.2 Doctoral study (PhD.)

Theory of Switching and Methodology of its Application in Telecommunications	I. Baroňák
Optical Communications - Theory and Methodology of its Application in Telecommunications	J.Čuchran, R. Róka
Digital Communications Theory ant its Applications in Telecommunications	P. Farkaš
Distributed and Photonic Switching - Theory and Methodology of Application in Telecommunications	M. Medvecký
Network Security- Theory and Methodology of its use in Telecommunications	M. Orgoň
Theory of communication Networks and Methodology its Application in Telecommunications	P. Podhradský
Queueing Theory and Methodology of Applications in Telecommunications	J. Polec
Optical Transmission Media - Theory and Methodology of its Application in Telecommunications	R. Róka
Digital Signal Processing - Theory and Methodology of Applications in Telecommunications	G. Rozinaj

IV. RESEARCH PROJECTS

IV.1 National Scientific Projects

- University's Scientific Park of STU Bratislava (ÚT participation). ITMS 26240220084. Duration: 4/2013 – 6/2015. (I. Baroňák)
- Coding for Distributed Information Cloud Infrastructure. VEGA 1/0518/13. Duration: 2013-2016. (P. Farkaš)

- Cross-Layer Optimization of Wireless Systems Throughput. VEGA 1/0789/15. Duration: 2015-2017. (1. Polec)
- Utilization of Web-based Training and Learning Systems at the Development of New Educational Programs in the Area of Optical Transmission Media. KEGA 039STU-4/2013. Duration: 2013-2015. (R. Róka)
- MINCA - Multimedia Information and Communication Technolologies - Study Programme in English. KEGA 047STU-4/2013. Duration: 2013-2015. (G. Rozinaj)
- IMUROSA - Integration of Multimedia Signal Processing Methods into Multimodal Interface and Network Applications. VEGA 1/0708/13. Duration: 2013-2015. (G. Rozinaj)
- MUFLON - Advanced Multimedia Services in the Environment of ICT Future Networks. APVV-0258-12. Duration: 2013-2016. (G. Rozinaj)

IV.2 International Scientific Project

- Innovation project in the frame of EC programme ERASMUS+ „TECHpedia" - European Virtual Learning Platform for Electrical and Information Engineering, Grant Agreement N° 2014-1-CZ01-KA202-002074, Duration: 9/2014 - 8/2017. (Pavol Podhradský)
- - International Centre of Excelence for the research of Intelligent and Secure Information-Communication Technologies and Systems. Operational Programme Research and Development, Project ITMS Code: 26240120039. Duration: 2014-2015. (G. Rozinaj)
- H2020 NEWTON - Networked Labs for Training in Sciences and Technologies for Information and Communication, H2020 ICT-20 2015 - Information and Communications Technologies, Technologies for better human learning and teaching. Duration: 2015-2018. (G. Rozinaj - STU coordinator)
- Physical Layer Security of LTE and LTE-Advanced. Aktion Österreich - Slowakei. Duration: 10/2015-2/2016. (A. Ralbovský)

IV.3 Young Research Projects STU

- Optimization of resource allocation in IPTV. Duration: 2015. (L. Kočkovič)
- Fusion of radar and comunication system using CDMA-OFDM technology. Duration: 2015. (I. Lapin)
- Usage optimization of MPLS network's elements. Duration: 2015. (M. Pištek)

V. COOPERATION

V.1 Cooperation in Slovakia

- Alcasys
- Alcatel-Lucent Slovakia
- ALISON Slovakia
- API
- Association of Companies of IT Industry, Bratislava
- ATOS IT Solutions and Services, s.r.o.
- Benestra
- Comenius University in Bratislava
- Council for Broadcasting and Retransmission
- Ericsson Slovakia
- ITM
- Methodical Pedagogical Centers
- Ministry of Economy of Slovak Republic
- Ministry of Transport, Construction and Regional development of Slovak Republic
- NextiraOne
- PROFiber Networking

- PTT Research Institute
- Slovak Agricultural University in Nitra
- Slovak Association of Electrotechnical Companies
- Slovak Statistical Office of Slovak Republic
- Slovak Telekom
- State Institute of the Vocational Training (ŠIOV), Bratislava
- Technical University in Košice
- Regulatory authority for electronic Communications and Postal Services of the Slovak Republic
- Telecommunication Users Group Slovakia
- University of Trnava
- University of Žilina
- Constantine the Philosopher University, Nitra
- Vocational School of IT Technologies, Banská Bystrica

V.2 International Cooperation

- AIT - Austrian Institute of Technology
- Alcatel-Lucent Deutschland AG
- Apierian Limited, Ireland
- ARC Seibersdorf research GmbH, Austria
- ATOS, Spain S.A.
- BEYOND s.r.l., Italy
- Blekinge Institute of Technology, Sweden
- Brandenburgischer IT-Dienstleister, Germany
- Brunel University London, United Kingdom
- Budapest Polytechnic, Hungary
- CELN Prague, Czech Republic
- Croatian Academy of Engineering, Zagreb, HR
- ČVUT in Prague, Czech Republic
- Deutsche Telecom Laboratory in Berlin
- Deutsche Telecom University in Leipzig
- Dublin City University, Ireland
- Ericsson, Sweden
- École Nationale des Télécommunications de Bretagne (ENST)
- EMMERCE EEIG, Linköping, Sweden
- Fachhochschule Heilbronn, Germany
- Institut Esteve Terradas i Illa, Spain
- Jade University of Applied Sciences, Germany
- Economic Chamber, CzR
- Fundación Universitaria San Pablo CEU, Spain
- Institut National des Télécommunications (INT), Evry, France
- ISEP Paris, France
- KIBERTEK, s.r.o., Czech Republic
- National College of Ireland, Ireland
- Nortel, Vienna, Austria
- NVIDIA, USA
- Polish Academy of Sciences Gliwice, Poland
- Politechnica Poznań, Poland
- Politecnico di Milano
- Portugal Telecom Inovacao
- QUI! Group S.p.A., Italy
- SIVECO Romania SA, Romania
- Sudile GbR, Germany
- T-Mobile, Czech Republic

- Telenor, Norway
- The National and Kapodistrian University of Athens, Greece
- TU Budapest, Hungary
- TU Graz, Austria
- TU Ljublana, Slovenia
- TU Maribor, Slovenia
- TU Wien, Austria
- TU Zagreb, Croatia
- Universitatea DIN Bucuresti, UBU, Romania
- Universidad Carlos III de Madrid, Spain
- University of Central Lancashire, United Kingdom
- University of Hradec Kralove, Czech Republic
- University of Strathclyde, Glasgow, United Kingdom
- University of Versailles, France
- University of West Bohemia in Pilsen, Czech Republic
- Universty of Hradec Kralove, Czech Republic
- UPC Barcelona, Spain
- VOŠ Vocational School and SŠ Higher School, Praha, Czech Republic
- VŠB TU in Ostrava, Czech Republic
- VUT in Brno, Czech Republic
- White Loop Limited, WLP, United Kingdom

VI. THESES

VI.1 Masters Theses

Masters theses written as part of the 5-year-study plan supervised at the Institute of Tele-communications. The names of supervisors are in brackets:

- Bánik, M.: Deployment of IPv6 protocol in computer network (T. Páleník)
- Belan, B.: The use of encryption to protect data transmitted in the PLC networks (M. Orgoň)
- Beničák, M.: Creating the 3D model of the human face for speech synthesis (G. Rozinaj)
- Brandis, M.: Security in Open IMS networks (M. Orgoň)
- Bugár, Š.: Proposal of new modified approach of data handling for information storing (P. Farkaš)
- Danóci, R.: Technical concept of IMS platform (I. Baroňák)
- Ducár, I.: Network virtualization (M. Medvecký)
- Fusek, T.: Control Devices Using by EEG Brain Signals (R. Vargic)
- Hornáček, M.: Support tool for study of network coding P. (Farkaš)
- Hossner, F.: Usage of PLC technology for telecommunication purposes (M. Orgoň)
- Hujsi, M.: Android application for improvement of communication via Short Message Service (P. Farkaš)
- Chňupa, P.: Tables for selected network codes (P. Farkaš)
- Ismail, F.: Programming framework for methods based on brain function principles (I. Minárik)
- Janšo, Ľ.: VoIP Technologies (I. Baroňák)
- Juhás, P.: Capture of network traffic over Wireshark (S. Klučik)
- Kačáni, M.: The energy efficient dynamic bandwidth allocation in the EPON (R. Róka)
- Káčer, J.: Securing the enterprise network infrastructure (M. Orgoň)
- Kaplan, N.: Application of fiber bragg gratings in sensor systems (J. Červeňová)
- Kárász, E.: QoS implementations in MPLS networks and its influence on voice communication (M. Halás)
- Karpiel, D.: Providing QoS for VoIP communication over IP networks (M. Halás)
- Kašuba, M.: Development of method for covering problematic areas with DVB-T signal. (R. Ščehovič)
- Kellovský, M.: IMS technical concept (I. Baroňák)
- Kocúr, Š.: Measurements on modern communication systems (T. Páleník)

- Korenko, P.: Design of terminal equipment for wireless radio transmission (M. Rakús)
- Košút, P.: Video cut extraction based on spectral metrics (J. Polec)
- Kovács, D.: A practical analysis of selected IPv6 mechanisms (T. Páleník)
- Krajňáková, A.: 'User Experience': System design for monitoring user behavior (G. Rozinaj)
- Kubranský, M.: G.Fast technology (K. Kotuliaková)
- Kukučiar, A.: The ensurance of errorless transmission in LTE technology (K. Kotuliaková)
- Levák, I.: Technical and functional implementation of IPTV (E. Chromý)
- Lipták, P.: PBX software solutions (S. Klučik)
- Magdolen, I.: Applications of optical communications in the PON access network (R. Róka)
- Majerčík, J.: Audio Compression (J. Kačur)
- Michalský, M.: Intelligent routing of content in content-oriented networks and services (R. Róka)
- Mokráň, M.: Phase shift keying PSK for optical transmission medium (R. Róka)
- Moravčík, M.: Testing of Open IMS solutions in terms of performance (M. Kavacký)
- Nichta, R.: Implementing of Asterisk system and VoIP for small and middle businesses (M. Halás)
- Obert, L.: Analysis of security RFID communication (M. Rakús)
- Olexa, T.: Modeling of sources of traffic in IP network (S. Klučik)
- Oravec, J.: PLC communications networks on power distribution lines (R. Róka)
- Orviský, R.: Using techniques of multiple antennas in the LTE (K. Kotuliaková)
- Peller, L.: AC methods in IMS networks (I. Baroňák)
- Pestun, M.: Development of mobile application for NFC communication (M. Rakús)
- Petrán, Š.: Modeling of Contact Center (E. Chromý)
- Prokša, V.: User identification using 3D face (G. Rozinaj)
- Pustay, J.: Virtual laboratory for optical transfer media (R. Róka)
- Rafajdus, B.: Video streaming (P. Farkaš)
- Stracenský, T.: Designing of telecommunication applications in Java language (M. Medvecký)
- Szlaur, E.: Mechanisms for interoperability between IPv6 and IPv4 protocols (T. Páleník)
- Šalík, P.: Amplitude shift keying ASK for optical transmission path (R. Róka)
- Šimko, M.: Gesture navigation of HBB system (G. Rozinaj)
- Šimončík, T.: Design of admission control method for IMS system (E. Chromý)
- Škrabák, M.: Study of hybrid ARQ schemes for LTE (K. Kotuliaková)
- Štefan, P.: Analysis of error-free transmission technology in Wi-Fi (K. Kotuliaková)
- Šturdík, T.: Wireless connection security to the wired network (M. Orgoň)
- Takács, I.: Software-defined networking (M. Medvecký)
- Teleky, J.: IMS charging architecture (M. Kavacký)
- Trenčanský, T.: Kinect as an input device for speech recognition (M. Trnka)
- Žabka, J.: Personalize the content-oriented networks and services (R. Róka)

VI.2 PhD Theses

- Čertík F.: Advanced techniques of optical signal processing in optical transmission media (R. Róka)
- Kultan M.: Routing optimization in NGN networks (M. Medvecký)
- Lábaj O.: Multi-level access control in multimedia applications (P. Podhradský)
- Pištek M.: Optimization of bandwidth allocation in NGN networks (M. Medvecký)

VII. OTHER ACTIVITIES

VII.1 Conferences and Seminars Organized by the Department

- ELOSYS 2015, October 2015 Trenčín, Slovak Republic, (cooperation with FEI STU Bratislava)
- 17th Conference of Doctoral Students - ELITECH 2015, June 2015, Bratislava, Slovak Republic, (cooperation with FEI STU Bratislava)
- 9th International Workshop on Speech and Signal Processing Redžúr 2015, May 2015

- Smolenice, (cooperation with FEI STU Bratislava and FMFI UK Bratislava)
- International Conference - RTT 2015 – Research Telecommunication Technology 2015, September 2015, VŠB Ostrava, Czech Republic, (cooperation with FEI STU Bratislava)

VIII. MEMBERSHIP IN INSTITUTIONS AND COMMITTEES

VIII.1 Membership in National Institution/Committees

- I. Baroňák: ETS norms, member of National Committee TNK No. 41 for Telecommunications, Transformation of ETS Norms in National Environment
- I. Baroňák: Member of Grant Committee of Ministry of Transport,Construction and Regional Development of Slovak Republic, Bratislava
- I. Baroňák: Journal: EE, member of Editorial Board of the journal
- I. Baroňák: VEGA, projects reviewer
- I. Baroňák: APVV (Slovak Research and Development Agency), projects reviewer
- I. Baroňák: KEGA, projects reviewer
- P. Farkaš: Scientific Board of Pan-European University in Bratislava
- P. Farkaš: Scientific Board of the Faculty of Informatics, Pan-European University in Bratislava,
- P. Farkaš: PhD. study Committee 5.2.15 Telecommunications Board of the Faculty of Electrical Engineering, Žilina University in Žilina,
- P. Farkaš: Working group 16 in Accreditation Committee of Slovak Government.
- P. Farkaš Central Registry of Publications - monographs evaluator.
- P. Podhradský: APVV (Slovak Research and Development Agency), projects reviewer
- P. Podhradský: KEGA, projects reviewer
- R. Róka: CTF in Slovak Republic, member
- G. Rozinaj: Scientific Board of the Faculty, Slovak University of Technology in Bratislava, Faculty of Informatics and Information Technology
- G. Rozinaj: Scientific Board of the Faculty, Slovak University of Technology in Bratislava, Faculty of Electrical Engineering and Information Technology
- G. Rozinaj: Scientific Board of the International Scientific and Technical Cooperation APVV

VIII.2 Membership in International Institution/Committees

- I. Baroňák: ETSI
- I . Baroňák: CTF in Slovak Republic, Executive committee member - CTF in Slovak Republic
- I. Baroňák: International Conference - RTT 2015 – Research Telecommunication Technology 2015, VŠB Ostrava, Czech Republic, September 2015, member of Program Committee
- I. Baroňák: Journal: AEEE (Advances in Electrical and Electronic Engineering), member of Editorial Board and reviewer
- I. Baroňák: Journal: Radioengineering reviewer
- I. Baroňák: Journal: Elektrorevue, member of Editorial Board and reviewer
- I. Baroňák: GAČR (Grant Agency of Czech Republic), projects reviewer
- I. Baroňák: Journal of Electrical Engineering, reviewer
- I. Baroňák: Journal: Acta electrotechnica et informatica, reviewer
- I. Baroňák: Journal: Integrated Computer-Aided Engineering, reviewer
- I. Baroňák: WSEAS Transactions on Communications Journal, reviewer
- I. Baroňák: Springer, Wireless Personal Communications, reviewer
- T. Csóka: IEEE
- P. Farkaš:, Expert evaluator contracted by European Commision, Research Executive Agency
- P. Farkaš: Journal - Slaboproudy obzor , member of Editorial Board of the journal
- P. Farkaš: URSI – Official Member in Scientific Commission C - Signals and Systems

- P. Farkaš: Member - Board of Doctoral Study Program Informatic, Faculty of Informatics, Czech Technical University
- P. Farkaš: GAČR (Grant Agency of Czech Republic), project reviewer
- P. Farkaš: Program committee member in following conferences:
- The 14-th Wireless Telecommunications Symposium, WTS 2015, 15. 4. -17. 4. 2015, New York City, USA
- The 9th International Conference on Signal Processing and Communication Systems, ICSPCS'2015, 14. 12.- 16. 12. 2015, Cairns (Barrier Reef), Australia
- Conference on Communications Technologies and Software Defined Radio (SDR-WInnComm 2015, 24-27 March 2015, San Diego, California, USA
- The 6th IET International Conference on Wireless, Mobile & Multimedia Networks (ICWMMN2015) 20 - 23 November 2015, Beijing, China
- The Tenth International Conference on Digital Telecommunications, ICDT 2015, April 19 - 24, 2015 - Barcelona, Spain
- AE 2015, 10th International Conference on Applied Electronics, 8–9 September 2015, Plzeň, Czech Republic
- IEEE Communications Letters, reviewer
- E. Chromý: Journal Advances in Electrical and Electronic Engineering, member of International Scientific Editorial Board and reviewer
- E. Chromý: International Conference KTTO 2015, Czech Republic, member of Scientific and reviewer
- E. Chromý: International Conference RTT 2015, Czech Republic, member of Programme Committee
- E. Chromý: WSEAS Transactions on Communications Journal, reviewer
- E. Chromý: Journal of Electrical Engineering – Elektrotechnický časopis, reviewer
- E. Chromý: 38th International Conference TSP 2015, Czech Republic, reviewer
- J. Kačur Workshop Redžúr 2015, Smolenice, member of Program Committee
- J. Kačur EURASIP Journal on Advances in Signal Processing, reviewer
- J. Kačur Conference TSP 2015, reviewer
- M. Medvecký: Conference TSP 2015, member of the Scientific Programme Committee and reviewer
- M. Orgoň: Radioengineering, reviewer
- M. Orgoň: International Journal AEEE, member of the Editorial Board
- M. Orgoň: Journal - AEEE, reviewer
- M. Orgoň: International Journal Elektrorevue, member of the Editorial Board
- M. Orgoň: Journal Elektrorevue, reviewer
- T. Páleník: IEEE
- P. Podhradský: Correspondent Member of Croatia Academy of Engineering,
- P. Podhradský: Conference IWSSIP 2015, member of Program and Reviewers Committees
- P. Podhradský: Workshop Redžúr 2015, member of Program and Reviewers Committees
- P. Podhradský: International Journal of Signal and Imaging Systems Engineering (IJSISE)
- member of Editorial board
- P. Podhradský: Conference ELMAR 2015, member of Program and Reviewers Committees, chairman of the session
- J. Polec: Journal of Electrical Engineering, reviewer
- M. Rakús: IEEE
- R. Róka: IEEE, INSTICC, member
- R. Róka: International Journal of Communication Networks and Information Security, Area Editor
- R. Róka: International Journal of Communication Networks and Information Security, member of the Editorial Board and reviewer
- R. Róka: International Journal Elektrorevue, member of the Editorial Board
- R. Róka: International Journal Advances in Electrical and Electronic Engineering, reviewer
- R. Róka: International Journal Radioengineering, reviewer
- R. Róka: Journal Measurement Science Review, reviewer
- R. Róka: Conference TSP 2015, member of the Scientific Programme Committee and reviewer
- R. Róka: Conference KTTO 2015, member of the Scientific Programme Committee
- R. Róka: Conference OK 2015, member of the Scientific Programme Committee
- R. Róka: Conference RTT 2015, member of the Scientific and Programme Committee and reviewer
- G. Rozinaj: Workshop Redžúr 2015, Smolenice, General Chair

- G. Rozinaj: Workshop Redžúr 2015, member of Program and Reviewers Committees
- G. Rozinaj: International Journal of Signal and Imaging Systems Engineering (IJSISE)
- member of Editorial board
- G. Rozinaj: Conference IWSSIP 2015, member of Program and Reviewers Committees
- G. Rozinaj: Journal of Electrical Engineering, reviewer
- G. Rozinaj: Acta Electrotechnica et Informatica, member of Editorial Board
- G. Rozinaj: EURASIP Journal on Advances in Signal Processing, member of Editorial Board
- G. Rozinaj: Conference ELMAR 2015, member of Program and Reviewers Committees, invi-ted lecturer, chairman of the session
- R. Rybárová: Workshop Redžúr 2015, Smolenice, Organizing Committee Chair, member of Program Committee
- R. Rybárová: Journal of Electrical Engineering, reviewer
- R. Vargic: Workshop Redžúr 2015, Smolenice, reviewer
- R. Vargic: Radioengineering, reviewer
- R. Vargic: Elektrorevue, reviewer
- R. Vargic: EURASIP Journal on Advances in Signal Processing, reviewer

IX. PUBLICATIONS

Books

1. ČERTÍK, Filip - RÓKA, Rastislav. *Advanced techniques of optical signal processing in optical transmission media*. 1. ed. Bratislava : Slovak University of Technology, 2015. 90 p. ISBN 978-80-227-4513-0. (in Slovak)
2. ORGOŇ, Miloš - RÓKA, Rastislav - MIŠUREC, Jiří. *Smart Grid and the PLC Communication*. 1. ed. Bratislava : Slovak University of Technology, 2015. 394 p. ISBN 978-80-227-4356-3. (in Slovak)
3. PODHRADSKÝ, Pavol - MIKÓCZY, Eugen - MATEJKA, Juraj - LÁBAJ, Ondrej - KADLIC, Radovan - SCHUMANN, Sebastian - TRÚCHLY, Peter - LONDÁK, Juraj. *NGN - Concepts, architectures and protocols*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 170 p. ISBN 978-80-227-4521-5. (in English)
4. PODHRADSKÝ, Pavol - MIKÓCZY, Eugen - SORIANO, Miguel - HELEBRANDT, Pavol - HALAGAN, Tomáš - DROZD, Ivan. *Future networks - Concepts, architectures and services*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 104 p. ISBN 978-80-227-4522-2. (in English)
5. RAKÚS, Martin. *Communication systems modelling with TIMS : Volume D9 - RADAR signals experiments*. 1. ed. Camperdown : Emona Instruments Pty Ltd, 2015. 66 p. ISBN 978-1-921903-12-0. (in English)
6. RÓKA, Rastislav - ČERTÍK, Filip. *Transport networks*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 246 p. ISBN 978-80-227-4410-2. (in Slovak)
7. RÓKA, Rastislav - ČERTÍK, Filip. *Access networks*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 149 p. ISBN 978-80-227-4409-6. (in Slovak)
8. RÓKA, Rastislav - ČERTÍK, Filip. *Fixed optical technologies*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 188 p. ISBN 978-80-227-4407-2. (in Slovak)
9. RÓKA, Rastislav - ČERTÍK, Filip. *Optical transmission systems*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 124 p. ISBN 978-80-227-4408-9. (in Slovak)
10. ROZINAJ, Gregor - RYBÁROVÁ, Renáta - KAČUR, Juraj - MINÁRIK, Ivan. *Multimedia processing*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 114 p. ISBN 978-80-227-4519-2. (in English)

11. RYBÁROVÁ, Renáta - ROZINAJ, Gregor - KAČUR, Juraj - TRÚCHLY, Peter - LÁBAJ, Ondrej - LONDÁK, Juraj - SCHUMANN, Sebastian. *Multimedia services and applications*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 112 p. ISBN 978-80-227-4520-8. (in English)

Parts of Books

1. CSÓKA, Filip - BAROŇÁK, Ivan. Routing SIP messages using SIP server Kamailio. In *Ročenka 2014. Fórum pre komunikačné technológie*. Banská Bystrica : DALI-BB, 2015, p. 65-74. ISBN 978-80-8141-084-0. (in Slovak)
2. HARTMANN, Matej - BAROŇÁK, Ivan. Contact center environments in IP networks. In *Ročenka 2014. Fórum pre komunikačné technológie*. Banská Bystrica : DALI-BB, 2015, p. 54-64. ISBN 978-80-8141-084-0. (in Slovak)
3. KOČKOVIČ, Ladislav - BAROŇÁK, Ivan - LACKOVIČ, Martin. Encoding and delivery of video content in wireless netwoks. In *Ročenka 2014. Fórum pre komunikačné technológie*. Banská Bystrica : DALI-BB, 2015, p. 75-83. ISBN 978-80-8141-084-0. (in Slovak)
4. RÓKA, Rastislav - ČERTÍK, Filip. Simulation Tools for Broadband Passive Optical Networks. In *Simulation Technologies in Networking and Communications : Selecting the Best Tool for the Test*. 1. ed. New York : CRC Press, Taylor and Francis Group, 2015, p. 337-364. ISBN 978-1-4822-2549-5. (in English)

Textbooks

1. BAROŇÁK, Ivan - CHROMÝ, Erik - KAVACKÝ, Matej. *Private telecommunication networks and services*. 1. ed. Bratislava : Slovak University of Technology, 2015. CD-ROM, 107 p. ISBN 978-80-227-4512-3. (in Slovak)

Journals

1. BALOGH, Tomáš - MEDVECKÝ, Martin. Weighted round robin and rate limiter based fair queuing for WRR. In *International Journal of Information Technology and Computer Science*. Vol. 7, No. 5 (2015), p. 51-60. ISSN 2074-9007. (in English)
2. CSÓKA, Filip - BAROŇÁK, Ivan - CHROMÝ, Erik - KOČKOVIČ, Ladislav. Analyze of SIP messages and proposal of SIP routing. In *International Journal of Communications*. Vol. 9, (2015), p. 109-113. ISSN 1998-4480. (in English)
3. CSÓKA, Tibor - POLEC, Jaroslav. Modeling poisson error process on wireless channels. In *International Journal of Communication Networks and Information Security*. Vol. 7, No. 1 (2015), p. 1-7. ISSN 2073-607X. (in English)
4. ČERTÍK, Filip. Utilization of encoding techniques at the signal transmission in the optical fiber. In *Advances in Signal Processing*. Vol. 3, No. 2 (2015), p. 17-24. ISSN 2332-6883. (in English)
5. ČERTÍK, Filip. The simulation of advanced modulation techniques and their resistance to the polarization mode dispersion PMD. In *Elektrorevue*. Vol. 6, No. 1 (2015), p. 15-24. ISSN 1213-1539. (in English)
6. FARKAŠOVÁ, Katarína - FARKAŠ, Peter - RAKÚS, Martin - RUŽICKÝ, Eugen - SILVA, Adao - GAMEIRO, Atílio. Construction of error control run length limited codes exploiting some parity matrix properties. In *Journal of Electrical Engineering*. Vol. 66, No. 3 (2015), p. 182-184. ISSN 1335-3632. (in English)
7. HOSSNER, Filip - ORGOŇ, Miloš. PBX software Asterisk working in a network PLC. In *Elektrorevue*. Vol. 17, Iss. 4 (2015), p. 88-97. ISSN 1213-1539. (in Slovak)

8. CHAMRAZ, Filip - BAROŇÁK, Ivan. Impact of admission control methods to the traffic management. In *Advances in Electrical and Electronic Engineering*. Vol. 13, No. 4 (2015) : Special issue, p. 280-288. ISSN 1336-1376. (in English)

9. KLUČIK, Stanislav - CHROMÝ, Erik - BAROŇÁK, Ivan. Model to increase the number of output states of a random variable using a histogram based PDF. In *Wireless personal communications*. Vol. 85, Iss. 1 (2015), p. 137-149. ISSN 1572-834X. (in English)

10. KUČEROVÁ, Júlia - POLEC, Jaroslav. Detection of frames with single complete signs of finger alphabet in video sequence using visual attention approach. In *Journal of Electrical Engineering*. Vol. 66, No. 3 (2015), p. 142-148. ISSN 1335-3632. (in English)

11. KULTAN, Matej - MEDVECKÝ, Martin. Congestion aware multipath routing: Aggregation network applicability and IPv6 implementation. In *International Journal of Information Technology and Computer Science*. Vol. 7, No. 11 (2015), p.9-16. ISSN 2074-9007. (in English)

12. KULTAN, Matej - MEDVECKÝ, Martin. Congestion aware multipath routing: Performance improvements in core networks. In *Advances in Electrical and Electronic Engineering*. Vol. 13, No. 5 (2015), p. 508-515. ISSN 1336-1376. (in English)

13. KULTAN, Matej - MEDVECKÝ, Martin. Congestion aware multipath routing: Loadbalancing core networks. In *AD ALTA : Journal of Interdisciplinary Research*. Vol. 5, Iss. 1 (2015), p. 100-103. ISSN 1804-7890. (in English)

14. ORGOŇ, Miloš - HOSSNER, Filip. Software PBX Asterisk designed on the platform PLC. In *Sdělovací technika*. Vol. 63, Iss. 12 (2015), p. 10-13. ISSN 0036-9942. (in Slovak)

15. PÁLENÍK, Tomáš - FARKAŠ, Peter - RAKÚS, Martin - DOBOŠ, Ján. Analysis of minimal LDPC decoder system on a chip implementation. In *Radioengineering*. Vol. 24, No. 3 (2015), p. 783-790. ISSN 1210-2512. (in English)

16. RÓKA, Rastislav. The environment of fixed transmission media and their negative influences in the simulation. In *International Journal of Mathematics and Computers in Simulation*. Vol. 9, (2015), p. 190-205. ISSN 1998-0159. (in English)

17. RÓKA, Rastislav - MOKRÁŇ, Martin. Modeling of the PSK utilization at the signal transmission in the optical transmission medium. In *International Journal of Communication Networks and Information Security*. Vol. 7, No. 3 (2015), p. 187-196. ISSN 2073-607X. (in English)

18. ŠALÍK, Pavol - ČERTÍK, Filip - RÓKA, Rastislav. Duobinary modulation format in optical communication systems. In *Advances in Signal Processing*. Vol. 3, No. 1 (2015), p. 1-7. ISSN 2332-6883. (in English)

19. TOKÁROVÁ, Ivana - MELUCH, Lukáš - FARKAŠ, Peter - RUŽICKÝ, Eugen. Forensic authorship determination with help of compaction algorithm. In *Slaboproudý obzor*. Vol. 71, Iss. 3 (2015), online, p. 1-5. ISSN 2336-5773. (in Slovak)

Conference Proceedings

1. BAVOLÁR, Rastislav - ROZINAJ, Gregor. Interactive television menu controlled by hand gestures. In *Redžúr 2015 : 9th International workshop on multimedia and signal processing. Smolenice, Slovakia. April 22-23, 2015*. Bratislava : STU, 2015,pS. 87-91. ISBN 978-80-227-4346-4. (in English)

2. BAVOLÁR, Rastislav - ROZINAJ, Gregor. Interactive television menu controlled by hand gestures. In *ELOSYS. Elektrotechnika, informatika a telekomunikácie 2015 : Trenčín, Slovakia. 13. – 15. October 2015*. Bratislava : STU, 2015, CD-ROM, p. 150-153. ISBN 978-80-227-4437-9. (in Slovak)

3. CORRAL, Gonzalo del - RYBÁROVÁ, Renáta. Diphone spanish text to speech synthesizer. In *Redžúr 2015 : 9th International workshop on multimedia and signal processing. Smolenice, Slovakia. April 22-23, 2015*. Bratislava : STU, 2015, p. 35-38. ISBN 978-80-227-4346-4. (in English)

4. CSÓKA, Tibor - POLEC, Jaroslav. Analysis of additive noise characteristics in indoor wireless sensor networks. In *EUROCON 2015 : International conference on computer as a tool. Salamanca, Spain. 8-11 September, 2015*. Danvers : IEEE, 2015, p. 60-65. ISBN 978-1-4799-8569-2. (in English)

5. ČERTÍK, Filip. The analysis of different encoding and modulation techniques at the signal transmission in the optical medium. In *APCOM 2015 : 21st international conference on applied physics of condensed matter. Štrbské Pleso, Slovak Republic. June 24-26, 2015*. Bratislava : STU, 2015, p. 290-294. ISBN 978-80-227-4373-0. (in English)

6. DÁVIDEKOVÁ, Monika. On the ideality of cross-correlation properties for concurrent use of (N2, N2, 2Nx2N) and (N2, N2, NxN) of complete complementary codes. In *SPIN 2015 : 2nd International conference on signal processing and integrated networks. Noida, India. 19-20 February 2015*. Danvers : IEEE, 2015, p. 291-295. ISBN 978-1-4799-5991-4. (in English)

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SPORTS TECHNOLOGY ISTITUTE

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	Deputy director of STI: PaedDr. Aleš Dunajčík	
	Department chair of Physical education Mgr. Alena Suttnerová	
	Department chair of Sport´s diagnostic Prof. Mgr. Erika Zemková, PhD.	
	Secretary of STI: Mgr. Martin Májek	
	Administrative staff: Mária Dobrotová (secretary)	

GENERAL INFORMATION

In 1993 KTV FEI STU was already situated in new premises that make it the best equipped departments in SR. The department has a small and a big gymnasium, a well equipped fitness centre a swimming pool and a bouldering wall. Nowadays, KTV FEI STU is divided into two sections: The section of physical education and the Section of physical education facilities administration. The priorities of the Department of physical education are:

- Instruction of physical education in daily bachelor and graduate studies, instruction of physical culture according to the faculty study programme as part of university studies,

- Representation of the school at university events,

- Cooperation in the development of sport movement at the faculty with the faculty management, academic bodies, faculty organisations and faculty sport clubs,

- Organisation of single sport events and competitions according to the schedule of sport events,

- Research activity (study of results of sport sciences, publishing, preparation of education materials and innovative elements in the field of physical education and sport, participation on research projects).

The section of physical education facilities administration is in charge of physical education facilities (regulation, maintenance and control) and of economic services (business activities, marketing).

The main activity of KTV FEI STU is the subject called Physical culture. Its aim is to obtain the optimal motion performance of the student, to make him/her understand the importance of the lifetime physical activity as one of the key factors of health, education and work performance.

During the first two terms, the subject Physical culture focuses on physical and ball games (basketball, volleyball- basic game activities of an individual, rules), and swimming (improving the individual swimming styles, training for non-swimmers). In the remaining four terms, the students ca choose from collective games

(basketball, floorball, football, volleyball - improving basic game activities of an individual, simple offencive and defencive combinations, simple game systems, realisation of offencive combinations, defencive combinations and game systems in a game), individual sports (badminton, swimming, table tennis, shooting, hiking, watermanship), or other activities (yoga, fitness, aerobic, self-defence). For students that are chronically ill, KTV FEI STU offers health physical education (special exercise for traumatogenic and surgical states of lower extremities, back pain; balance exercises; yoga exercises for disabled persons, diseases of spine and joints, some allergies,

hypo-immunity; individual swimming and exercises in water according to the instructions of a doctor). By selection physical education, the department prepares the representation of the faculty in sport games and individual sports. In close cooperation with the subject Physical culture, tens of events are organised under the patronage of the Slovak Association of university sport, sport unions and associations in the Slovak Republic.

Physical education and sport are social and political necessities. It is a phenomenon that can move the whole world. The Department of Physical Education tries to mediate this phenomenon to students and employees of FEI STU and to enrich their private and professional life.

Based on the decision of the Dean of FEI STU with effect from 1st December, 2012 the name of KTV FEI STU has been transformed toTechnological Institute of Sport (TIS FEI STU)

I. STAFF

Professors	Erika Zemková
Assistant Professors	Zlatica Dariusová, Aleš Dunajčík, Michal Jeleň, Libor Jurkovič, Pavel Lackovič, Jana Lamošová, Martin Májek, Peter Miklovič, Vladimír Pajkoš, Alena Suttnerová

II. EQUIPMENT

- Fitness Centre
- Gymnasium
- Small Gymnasium
- Swimming pool
- Climbing wall
- Martial-Arts Gym

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per each semester, name of the lecturer:

Aerobics	(1st-8th sem., 18 hours each sem.)	A. Suttnerová
Badminton	(1st-8th sem., 18hours each sem.)	V. Pajkoš
Basketball	(1st-8th sem., 18 hours each sem.)	J. Lamošová
Outdoor activities	(1st-8th sem., 18hours each sem.)	P. Lackovič
Fitness	(1st-8th sem., 18 hours each sem.)	P. Lackovič

Fitness	(1st-8th sem., 18 hours each sem.)	A. Suttnerová
Fitness	(1st-8th sem., 18 hours each sem.)	M. Jeleň
Floorball	(1st-8th sem., 18 hours each sem.)	M. Májek
Football	(1st-8th sem., 18hours each sem.)	A. Dunajčík
Joga	(1st-8th sem., 18 hours each sem.)	A. Suttnerová
Self-defence	(1st -8th sem., 18 hours each sem.)	L. Jurkovič
Skiing	(1st -8th sem., 18 hours each sem.)	P. Lackovič
Skiing	(1st -8th sem., 18 hours each sem.)	V. Pajkoš
Sports shooting	(1st-8th sem., 18 hours each sem.)	L. Jurkovič
Swimming	(1st-8th sem., 18 hours each sem.)	L. Jurkovič
Swimming	(1st-8th sem., 18 hours each sem.)	Z. Dariusová
Table Tennis	(1st-8th sem., 18 hours each sem.)	M. Májek
Volleyball	(1st-8th sem., 18 hours each sem.)	M. Májek
Volleyball	(1st-8th sem., 18 hours each sem.)	Z. Dariusová

III.2 Graduate Study (Ing..)

Optional Physical Education for the students in Graduate Study the same as in Undergraduate Study.

IV. RESEARCH PROJECTS

IV.1 National Scientific Projects

- ovel methods for the assessment of postural and core stability in sport and rehabilitation. No. : SK-CZ-2013-0131 (2013-2015), coordinator: E. Zemková, (P. Miklovič, M. Jeleň)

V. COOPERATION

V.1 Cooperation in Slovakia

- Slovak Union of Physical Culture, Bratislava
- Faculty of Physical Education, Comenius University, Bratislava
- School of Physical Education and Training, Bratislava
- Slovak Association of Academic Sports, Bratislava
- Slovak Volleyball Federation, Bratislava
- Slovak Basketball Association, Bratislava
- Slovak Olympic Committee, Bratislava
- Slovak Gojuryu Karatedo Gojukai Association, Bratislava
- Slovak Floorball Association, Bratislava

V.2 International Cooperation

- Technical University Delft, The Netherlands
- Technical University Zagreb, Croatia
- Technical University of Budapest, Hungary

- Bournemouth University, UK
- Associazione Sportiva Dil ettantistica EuroSportEvents, Roma, Italy

VI. THESES

VI.1 Masters Theses

Masters theses supervised at the Department of Physical Education. The names of supervisors are in brackets.

VI.2 PhD Theses

None

VII. OTHER ACTIVITIES

- Basketball College league
- Volleyball College league
- Floorball College league
- Swimming College league
- Futsal College league
- Winter camp in France, La plagne- 2.-10.1.15
- Volleyball - lecture – 26.1.2015
- Fitness – lecture - 27.1.2015
- Basketball –- lecture - 28.1.2015
- Swimming – lecture – 3.2.2015
- Basketball – lecture – 4.2.2015
- Basketball – lecture – 5,2,2015
- Basketball – lecture – 11.2.2015
- Winter ski course, Malino-Brdo 9.-13.2.15
- Joga – the way to the health of body and mind (lecture) - 13.2.15
- STU Basketball Championship (students) – 23.3.15
- STU Basketball Championship (employees) – 25.3.15
- MIX Volleyball tournament - 15.4.15
- Expeditions 2015 (12 presentations) - 18.4.2015
- STU Volleyball Championship (students -men) – 20. 4. 15
- STU Volleyball Championship (students - women) – 21. 4. 15
- STU Volleyball Championship (employees) – 21. 4. 15
- FEI STU Table tennis Championship - 22.4.15
- FEI STU Badminton Championship - 24.4.15
- FEI STU Floorball Championship - 6.5.15
- Badminton Summer tournament of employees FEI STU – 14.5.15
- Bouldering tournament – 13. - 14.5.15
- Bicycle touring   Passau - Bratislava - 10.-14.6.15
- Sports Games FEI STU, Gabčíkovo (autumn) – 16.-17. 9.15
- Badminton Tournament (students vs. employees) – Students´ Day - 13.11.15
- Basketball Tournament (students vs. employees) – Students´ Day - 18.11.15
- Volleyball Tournament (students vs. employees)– Students´ Day - 25.11.15
- First aid– lecture - 10.12.15
- Christmas Badminton Tournament of employees FEI STU - 11.12.15

- Christmas carp - 14.12.15

VIII. MEMBERSHIP IN INSTITUTIONS/COMMITTEES

VIII.1 Membership in National Institutions/Committees

- Coach of Slovak Rowing Federation (P. Lackovič)
- Chairman of the Supervisory Board of Slovak University Sports Association (P. Miklovič)
- General secretary of committee Slovak Gojuryu Karatedo Gojukai Association (P. Miklovič)
- Member of the Yoga Sosiety (A. Suttnerová)
- Member of Slovak Equestrian Federation (J. Lamošová)
- Member of Equestrian club Over Žilina (J. Lamošová)
- Members of Coaches Association Slovak Basket Association (J. Lamošová)
- Coach of the volleyball club SPU Nitra (M. Májek)
- Members of University sport club VŠK FEI STU, (P. Miklovič, P. Lackovič,
  A. Dunajčík, A. Suttnerová, J. Lamošová, M. Dobrotová (secretary))

VIII.2 Membership in International Institutions/Committees

- Member of Japan Karatedo Federation (P. Miklovič)
-

IX. PUBLICATIONS

Parts of Books

1. VAVRINSKÝ, Erik - DAŘÍČEK, Martin - HORÍNEK, František - DONOVAL, Martin - MIKLOVIČ, Peter. Simultaneous measurement of EMG, MMG and EIM via wireless holter. In *Spektrum informačných zdrojov z biomedicínskeho prostredia & výmena teoretických a klinických poznatkov*. Praha : Evropská asociace pro fototerapii, 2015, S. 179-185. ISBN 978-80-87861-11-0. (in Slovak)

Journals

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SPECIALIZED CENTRES

NATIONAL CENTER OF TELEMEDICAL SERVICES

Head: Ing. Fedor Lehocki, PhD.

National Center of Telemedical Services is focused on research and development in the area of innovative telemedical services, supporting the vision of a modern health service in the Slovak Republic. The center cooperates with national and international medical and technological partners from academic, state and commercial areas. It transfers the achievements in research and development in telemedical services into medical treatment, health service management, collecting and analysis of medical data and their application in clinical practice. Research achievements are tested in pilot solutions and successful projects are applied in practice. The possibilities of the use of telemedical services include a variety of solutions reaching from medical video consultations, electronic doctor-patient communication to monitoring patients' vital functions at their homes. The strategic partner of the center is IBM Slovakia

CENTER OF NEW EDUCATIONAL TECHNOLOGIES

Head: prof. Ing. Mikuláš Huba, PhD.

In March 2011 the Center completed the project Leonardo Revive focused on the improvement of a distance course of secondary school mathematics. The Center also completed a KEGA project – "Building of Virtual and Distant Experiments for Online Laboratories Network" in December 2011. The Center cooperated with the European Association of Distance Teaching Universities and the European Association of Institutions in Higher Education on completing an LLL Promoters project application aimed at enhancing lifelong education at universities. The Center cooperated on the admission of the IN-STU-d-ING project as part of the operating program to build up the study program Applied Mechatronics in English language. The Center cooperated on formulation of the research project within the 7th framework program MetaLab focused on supporting distant laboratories. (not approved).

Publication of textbooks for distance study belongs to regular activities of the Center.

CENTER OF NUCLEAR TECHNOLOGIES (CNT)

Head: prof. Ing. Vladimír Nečas, PhD.

The CNT offers own capacity and equipment for material physics, analyses of various materials used in practice: a) analysis of standard and special materials using nuclear physics methods (Mössbauer Spectroscopy, Positron Annihilation Spectroscopy, Gamma Spectroscopy) from the point of view of knowledge, not only properties (structural, magnetic, radiation, etc.) but also the processes running inside; b) the ion beam modification of materials using particles accelerator for microelectronics, optoelectronics, nanotechnology and nuclear energy; c) the X ray digital imaging of different subjects by means of innovative semiconductor detectors in various areas of medicine, industry and safety. CNT offers participation also in the projects of the safe use of nuclear energy, in research and development of novel nuclear technologies (reactors of 4th generation, thermonuclear reactor), computer modeling and simulation of neutron-physical characteristics of VVER-440 reactors, nuclear

fuel cycles, optimization of blocs operations and their nuclear safety. We offer analyses of radiation environmental influences, including problems connected with decommissioning of nuclear power plants.

INSTITUTE OF ELECTRICAL ENGINEERING AND INFORMATICS EXPERTISE OF FEI STU IN BRATISLAVA

Director: prof. Ing. Alfonz Smola, PhD.

The objectives of the Institute are:

- to provide expertise in given technical specializations in accordance with Law No 382/2004 Coll on experts and interpreters and with Decree No 492/2004 Z. of. for state authorities, as well as for other legal and individual entities,
- to prepare specialists from professional practice for expertise in technical and economic specializations in the form of specialized training in accordance with Law No 382/2004 Coll,
- to do research into expert report methodology, including related economic, technical and legal areas,
- to organize symposia, seminars and conferences focused on expertise,
- to publish textbooks, proceedings of events organized by the Institute and non-periodical publications from the area of forensic expertise,
- to organize counseling for legal and individual entities,
- to organize specialized assistance for central state authorities in harmonization of our legislation with EU regulations.

The Institute has been authorized by the Ministry of Justice of the Slovak Republic to test experts on electrical engineering, informatics and power engineering in the form of a special examination.

MUTUAL WORKPLACE FOR SPECIAL MEASUREMENTS AND ELECTROMAGNETIC COMPATIBILITY (IN COOPERATION WITH THE INSTITUTE OF ELECTRICAL ENGINEERING AND PROJECTS, SNOVÁ DUBNICA)

Head: doc. Ing. Karol Kováč, PhD.

The HiTech Center for Electromagnetic Compatibility has been established as part of the state science and research program "Complex Solution of Support and Effective Use of Research and Development Infrastructure" called "Support of Research and Development from the Viewpoint of Electromagnetic Compatibility" that was completed by final opponency in October 2011. The Center is located at FEI STU. Its workplaces are the EMC laboratory of the Institute of Electrical Engineering and the Mutual Workplace for Special Measurements and Electromagnetic Compatibility in the Institute of Electrical Engineering and Projects in Nová Dubnica. The faculty counseling workplace of the Center is aimed at supporting research and development in the EMC area. The scope of its activities reaches from specialist counseling, computer modeling of EMC phenomena, subsystems and systems to verification of EMC features of prototypes of electronic systems. For all of these activities it is equipped with technical and programming facilities on top European level. Every year, the Center provides support to 45 projects of scientific and research organizations in Slovakia.

FEI STU Test Laboratory

Head: doc. Ing. Karol Kováč, PhD.

FEI STU Test Laboratory is a certified test workplace (SNAS Certificate No. S-066) that is authorized to test electrical, protective and work equipment for electrical engineering, electrical products, light sources, lamps and optical materials as well as measurements of physical values in environment in general and in working environment– lighting measurements.

It is authorized to test high voltage technology, electromagnetic compatibility and lighting technology.

OFFICE FOR EUROPEAN UNION PROGRAMMES

Head: doc. Ing. Marián Veselý, PhD.

Office for European Union Programmes (OEUP) at Faculty of EE&IT (FEEIT) functions since its establishment in 2000 as an autonomous Office of this Faculty. The main task is to support and develop international collaboration in the area of educational, research, cultural and entrepreneurial activities with an aim to increase the participation of groups and individuals mainly from FEEIT in international projects and to secure an effective development of human resources at FEEIT. Into the scope of the OEUP also belongs a preparation of international projects including a generation of professional and financial conditions for execution of international mobility for STU graduates.

OEUP activities could be summarized as follows:

- Organization and caring out international mobility programmes for STU graduates
- Search for new forms of international collaboration including new project proposal preparation within EU programmes and further elaboration of contacts with abroad ,
- Active collaboration and cooperation within national and international projects with other Slovak Universities,
- Further development of contacts with non-governmental organizations mainly in the area of education and research, deepening of contacts with state and private organizations in the area of education, research and collaboration with industry,
- Advisory and consulting service in the area of preparation, submission and management of EU projects, including organization of seminars and training,
- Help in search for domestic and foreign partners for projects within EU programmes ,
- Coordination of international research, education and other project preparation,
- Communication with National Agencies and National Contact Points for individual EU programmes,
- Advisory and consulting activity within preparation and carrying out of events with foreign participation (workshops, seminars, conferences, etc.),
- Preparation of events initiated by foreign partners.

OEUP itself has coordinated and was carrying out educational, research, supporting and other projects.

Leonardo da Vinci program mobility projects, granted to OEUP, represent for STU graduates a significant milestone in their professional life. This is happening also thanks to professional preparation of these specialized stays by OEUP.

OEUP is acting also in Leonardo da Vinci LLL program focused on vocational training (students, teachers of vocational/high schools oriented to ICT, as well as on vocational training of staff of ICT companies and further institutions)

NATIONAL CENTRE OF ROBOTICS

President: doc. Ing. František Duchoň, PhD.

The National Centre of Robotics is an association established under the patronage of Faculty of Electrical Engineering and Information Technology, Slovak Technical University in Bratislava. Establishment of the Centre had several reasons – research, support and development of robotics in the university and society-wide environment. The Centre is working with several universities and commercial firms and it is supporting students in the research activities. It is participating in several projects, including the structure H2020.

The members of the National Centre of Robotics are internationally accepted professionals in the field of robotics, cybernetics and automation. It is a young team open to any challenges.

The competencies of the Centre in the area of robotics and industrial automation are:

- Industrial robotics
- Service robotics
- Mobile robotics
- Drones
- Visual systems
- Force-torque control
- Automated welding
- Suppression of vibrations
- Mobile manipulation
- SLAM and navigation
- ROS
- Humanoid robotics
- Atypical mechatronic concepts
- Data

FACULTY

OF ELECTRICAL

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