

Research Catalogue 2010

SZÉCHENYI ISTVÁN UNIVERSITY

SZE - GYŐR

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Investing in your future
New Hungary Development Plan

Research Catalogue 2010

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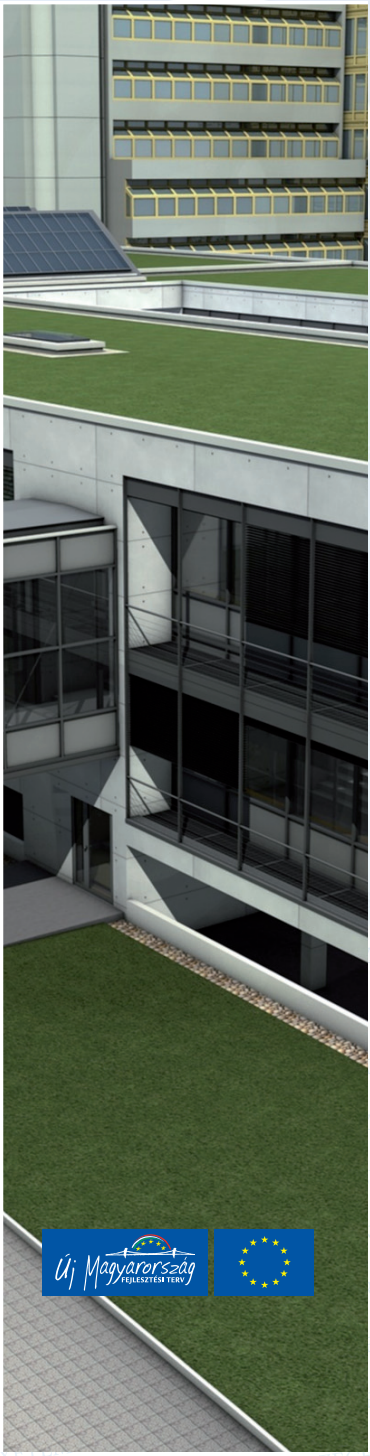

Dear Future Partner,



Welcome on behalf of the members of the first national Hungarian university of the 21st century and thank you for your interest by taking a copy of our publication with you!

Everyday we have to do something for the city, region, and country that host us. This is our objective, and due to our considerable openness - that has been a part of our university since its foundation – and the ability to constantly develop we are in a good position to head into the new millennium. The Hungarian higher education system is facing a serious challenge. It is necessary to be constantly able to change and renew in regards to the new environmental conditions. For this reason our institution has to work in the highest quality, serving science, society and the economy.

For the implementation of the comprehensive development strategy - aiming for the intellectual, scientific renewal of our university - the European Union's resources of the New Hungary Development Plan provide significant finances.

Besides the infrastructural developments, the intellectual and scientific renewal also has an emphasized role that is countermarked by the newly founded Knowledge-Management Centre and the projects, linked to it.

The mapping and utilization of the university knowledge-wealth, various technological transfer activities -forming an entrepreneurial attitude in the training - and a high level of education that stands in the centre of the operation of the new organizational unit.

This Research Catalogue was prepared in terms of this conception that presents the knowledge-wealth of Széchenyi István University in a systematized form. The catalogue presents the research profile of our departments, institutes, the applied scientific methods, the special tools, and the services, provided by them and the major references.

We are waiting for your response!

Dr. Tamás Szekeres
Rector
Széchenyi István University

SZÉCHENYI ISTVÁN UNIVERSITY
SZE - GYŐR

Past...





...and Future

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Knowledge-Management Centre

Széchenyi István University is an influential university in the West-Transdanubian region and a reliable cooperation partner (having several years of experience) with companies of the area.

The institution constantly extends its knowledge-bases, laboratory infrastructures and research capacities that are used to larger and larger extent by its partners. The Knowledge-Management Centre, established on 1st July 2009 is a horizontal service provider of the University. Its professional supervision is performed by the general-and scientific vice-rector.

Within the framework of the project, number 4.2.1.-08/1-2008-0005 of TÁMOP (Social Renewal Operative Programme), the Centre develops services that aim on the one hand to explore, utilize and support the evaluation of new research, innovation and technological transfer opportunities, based on the research resources and competences of the university, and on the other hand to promote the university to become a regional knowledge centre, through the development of university knowledge-management processes and information systems, and through active economic and institutional partner management.

The basic principles of the operation of the Knowledge-Management Centre are the following

- **Customer-orientation and transparency:** the operation of the centre has a process attitude, the services are provided in a uniform way and constant information is given to the internal and external clients, in a transparent way.
- **Market-orientation:** its services closely adjust to the internal- and market demands, that is why the internal and external market demands - connected to its services - are regularly assessed, and the development of its services are based on that.
- **Proactivity:** the centre takes an active role in the development of economic and scientific contacts. The partners and participants are not waited for passively, but they are actively searched out. The cooperation that opens up new opportunities for new technological transfer- and innovation opportunities and market demands are actively searched and hunted for.

The tasks of the Knowledge-Management Centre

- Assesses, sorts into database and publishes the competences and scientific activity of the university institutes and members;
- Provides data-support, performs analyses on the scientific activities of the university;
- Assesses the innovation requirements of the economic operators and the demands concerning university services;

- Generates research- and innovation projects, builds up partnerships;
- Explores the intellectual outcomes originating from R&D activities carried out by university departments and their staff, designs and manages an intellectual product portfolio from that;
- Supports technology-transfer and establishment of spin-off companies;
- Coordinates the organisation of the scientific programmes, among others the programme-series "Science for everybody in Győr" that has been operating since February 2010 and makes the recorded presentations of this series available on-line;
- Organises trainings and courses in order to generate, effectively manage and administrate scientific projects, on topics connected to innovation management;
- Prepares industrial branch analyses, including international and national inspections, performs novelty- and market research;
- Cooperates with innovation actors of the region, with national and international professional organizations, and establishes partnerships with them.

Contact information

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Knowledge-Management Centre
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Staff



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University Library

Széchenyi István University, University Library is a public library which is member of the National Document Supply-System (ODR). It has skilful staff whose main aim has been to serve academic work in the university for 40 years. This library assists lifelong learning and civilization with its information system, up-to-date collection and services. The number of registered users exceeds 7.500 and consistently growing. The number of visitors is nearly 200.000.

University Library was established in 1974. It was moved to this present place in 1977. The library has nearly 300.000 pieces in its holding which is annually growing with approximately 8-10.000 new documents. Very unique pieces can be found in this collection because the library had copyright deposit.

Besides the Central Library there are 34 deposit libraries and Deák Ferenc Faculty of Law and Political Sciences also operate a faculty library.

Collection: University Library collects Hungarian as well as foreign documents. The collection is consistently growing parallel with the development of university and new faculties.

This collection contains more than 200.000 books, maps, scores, more than 700 titles of Hungarian and foreign current periodicals, 45.000 theses, dissertations, 3.500 audiovisual and digital documents, nearly 25.000 standards. Beside we are subscribed of full text and bibliographic databases.

Computers: We have been using the ALEPH integrated system since 1994. In 2010 our whole collection is available in computer. This system contains 14 working places, and 5 further terminals. We have 17 computers for readers from which 2 computers have touch-screen for blind and visually handicapped people. In 2001 loan module was introduced. In 2002 we have started a website which is edited by our colleagues. Our online catalogue is also available via this site.

Our Services: According to our regulation everybody can be member of the library who is already 18 year-old Hungarian or foreigner attendee of regular courses or correspondence courses.

Those who did not fill this age can enrol only with the consent of their lawful representative.

The library services can be used for free to all registered readers. The only exception of this rule is copying.

Traditional services: Lending, library use, inter-library loan, expert information, reprographic services, information services, extension, advance booking and reference etc.

In addition to, as a priority task the library ensures the usage of computers, access to different digital contents, taking part in information literacy and research methodology lessons and building of databases.

In the last year and a half developments had particular importance in the on-line extension and on-line reservation system building which helps to receive the reminder letters in e-mail.

As from 1 June 2010 the result of the collaboration of University Library and the Hungarian Official Journal Publisher Ltd., we operate legal information terminal which contains laws in force in full and updated text format. Topic, keyword, and passage search is also available. Using this terminal is free of charge.

Those databases which are available on the territory of the campus or library assist researches and academic works. The usage of databases is free but it is bound to registration.

Full text and electronic databases

EBSCO general database
EBSCO – Legal Collection, Public Administration Abstracts
EISZ (contents: Web of Science, Science Direct, Springer Link, Lecture Notes in Computer Science (1997-2008), Academic Periodical Collection, Econlit, ACM Digital Library, JSTOR, Dictionaries, Language tests)
IMF databases: International Financial Statistics (IFS), Direction of Trade Statistics (DOT), Balance of Payment Statistics (BOP)
HBI on-line: „Port of Business" includes business information and company information.
NAVA database: National Audiovisual Archive
Széchenyi István University, University Library aims at supporting education and teaching as an information centre. Future plans of the library are parallel with the university educational conceptions; with our services we try to fit this mission.

Further information: http://lib.sze.hu

Opening hours:

Central library:	Monday-Thursday:	9.00-19.00
	Friday:	9.00-18.00
	Saturday:	8.00-12.30

Deák Ferenc Faculty of Law and Political Sciences: Monday-Friday: 8.30-20.00

Contacts:

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Anikó Figula director
Tel: +36 96 503 441
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Lending:
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Email: garai@sze.hu
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Email: mareke@sze.hu

Deák Ferenc Faculty of Law and Political Sciences: Áldozat u. 12., Győr H-9026
Zalán Biczó director
Tel: +36 96 613 559
Email: biczo@sze.hu

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University Research Organization Units



Regional- and Economics Doctoral School

The Regional-and Economics Doctoral School has started operation in 2004 in two areas of science (economics and law), and then in 2008, after the separation of the law department, it focuses on regional science, management and organisation science.

The aim of the school is teach the students about with the newest theoretical and methodological results of regional science, furthermore striving to focus on marketing science in cases of management- and organisation science analyses and assuring strong inter-discipline cooperation between the two areas. The constant scientific cooperation between the two branches of science is verified by the fact that 22,9% of the research topics being currently developed (planned dissertation topics) are connected to regional science, 64,6% are connected to management- and organization science and 12,5% of these affects both branches of science reciprocally.

> „Within regional science the spatial extension of innovations, the renewal of planning systems, the complex analyses of cities…are highlighted"

Within regional science, not only the spatial extension of innovations, the renewal of planning systems, the complex analyses of cities, the revelation of Central-European area processes, the analyses of the development conditions offered by rural areas are highlighted, but the topics connected to regional systems, thus culture economics, the organisation of public services, or just the connections of municipal systems are also highlighted. In the case of management and organisation sciences, the research topics focus on marketing science, including the theoretical and application questions of marketing strategy, the different analysis processes of market research, the factors determining the consumers' behaviour, in addition there is an increased interest in management topics. Research projects have begun recently in the field of tourism and the tourist industry.

The doctoral school organises several conferences yearly, from which it takes care of the Young Regionalists National Conference series. Within the scope of organised training famous foreign and Hungarian experts give lectures. The school publishes an annual in which publication opportunities are ensured for the students. Every year professional trips are organised to Eastern- and Southern-Europe.

The school has 74 active students in the autum semester 2010/2011 (from which there are 11 full-time, 55 correspondent, 8 independent) and has 68 graduated students.

Since its beginning (February 2004), 29 persons have earned a degree in the doctoral school, 4 persons in law and political sciences, 22 persons in management and bussiness administration sciences and 3 persons in regional sciences. At present the degree process of 6 persons is in progress. In the past period the acceptance of the degree of 2 persons has finished. 6 persons have earned the habilitated doctoral title as a lecturer so far and 2 honorary doctor titles were awarded to Professor Mihály Simai and Professor Csaba Csáki

ordinary members of the Hungarian academy of Sciences. The honorary university professors of the school are György Schöpflin Member of the European Parliament (MEP) and university professor Richard Berry (Glasgow University).

Head of the Doctoral School:
Dr. János Rechnitzer university professor,
rechnj@sze.hu

CORE MEMBERS OF THE SCHOOL:
Dr. Györgyi Barta DSc.,
Dr. Andrea Bencsik CSc.,
Dr. Antal Bőhm DSc.,
Dr. László Józsa CSc.,
Dr. Mihály Lados CSc.,
Dr. Miklós Losoncz DSc.,
Dr. János Rechnitzer DSc.,
Dr. Irén Kukorelli Szörényiné DSc.

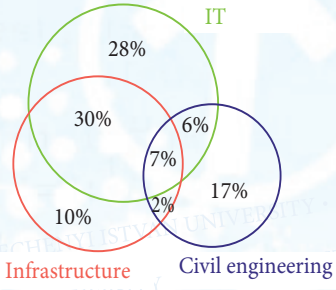
Multidisciplinary Doctoral School of Engineering Sciences

The Multidisciplinary Doctoral School of Engineering Sciences named "Modelling and Development of Infrastructural Systems" was established in 2005. In the course of its operation, it focuses on three areas of science - information technology, infrastructure, and civil engineering.

The mission of the doctoral school is to become one of the most important workshops of scientific research at the Faculty of Engineering Sciences. The cooperation of professors, researchers and PhD students promotes the development and continuation of work necessary for research, and high standard publication of the results. Furthermore the Doctoral School is an important resource for the Faculty in the supply of high standard teaching staff.

As a result of the history of the Faculty, a significant part of the research of the Doctoral School is connected to more areas of science, as the cooperation of certain disciplines have several decennial traditions.

The diagram below shows the overlapping of the areas of the research topics of the doctoral school, based on the classification of the supervisors. The connection between information science and infrastructure areas is especially significant, but common topics can be found everywhere. 45% of the research topics belong to more than one area of science altogether.



Besides the three main areas, the doctoral school provides help in studying connected areas of science, for example electrical engineering, mechanical engineering and architectural topics.

There is a publication of the Doctoral School: the series "Engineering and IT Systems and Models" that publishes the first independent studies of the PhD students annually. 4 issues have been published so far.

The core members of the doctoral school take an active part on the editorial board of the scientific review of the faculty - the „Acta Technica Jaurinensis" (Győr Transactions on Engineering) - that is closely connected to the school. 6 issues have been published so far.

The school has 59 active students in the autum semester 2010/2011. In the past period it was happened 6 successful dissertation defences and 5 examinations for doctoral degree. At present the degree process of 11 persons is in progress, while up to now 3 persons have been conferred the degree. Professors Pal Michelberger and Kaoru Hirota were awarded the honorary doctorate title.

CORE MEMBERS OF THE SCHOOL:

Dr. András Bakó DSc.,
Dr. Árpád Csík PhD.,
Dr. András Edelmayer CSc.,
Dr. János Égert CSc.,
Dr. Csaba Gáspár CSc.,
Dr. László Gáspár DSc.,
Dr. Péter Holló DSc.,
Dr. László Keviczky,
full member of the MTA (Hungarian Academy of Sciences),
Dr. Csaba Koren CSc.,
Dr. László T. Kóczy DSc.,
Dr. Péter Várlaki DSc.,
Dr. Gábor Winkler DSc.

Head of the Doctoral School:
Dr. László Keviczky university professor, keviczky@sze.hu
Head of the Council of the Doctoral School:
Dr. László Kóczy university professor, koczy@sze.hu

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Doctoral School of Law and Political Sciences

The Doctoral School of Law and Political Sciences was established in 2008. The school provides a blend of theoretical and practical knowledge at a high level. Our postgraduate training is attractive not only for those who want to obtain theoretical knowledge, but it is also highly beneficial for professionals coming from the field of legal practice.

A complex quality criteria-system has been developed by our professors. Besides the usual legal topics, political sciences also have an important role in our doctoral workshop. In addition to constitutional and administrative law, our school also offers special opportunities for those who are interested in the topics of management and political sciences. Our lecturers are prestigious representatives of their profession, who have extensive practical experience. We offer practical research topics as well as theoretical ones.

Special attention is paid to the fact that the participants of the PhD training enjoy the benefits of the geographical location of the school. We introduce guest professors from Vienna, Bratislava, Germany and the Scandinavian states, as well as from other important universities around the world. With its research programme, conferences and good professional relations, the doctoral school participates in the Hungarian and international scientific community.

Our announced research topics – fields of research – are the following:

- legal theory - philosophy of law,
- synoptical constitutional theory,
- development and features of constitutionality,
- the problems of institutionalization of the collective fundamental rights,
- the parliament, parliamentary law, parliamentary democracy,
- political and governmental systems, democratic control of the government,
- sources of law,
- fundamental rights in private law,
- civil law and public law,
- European competition law,
- international transport law,
- general legal questions of electronic commerce and consumer protection,
- fundamental rights in criminal law,
- development perspectives of the Hungarian criminal legislation,
- international cooperation of authorities in criminal cases,
- the connection between the demographic changes and crime,
- application of statistical methods through the examination of crime,
- bioethics, criminal law and medical science,
- codification of criminal law in the 19th century Hungary,
- change of the punitive system in the 19th century,
- the constitutionality of public administration in the modern constitutional state,
- the central organization and operation of public administration,
- the basic lines of the municipality administration,
- the control of public administration,

- the role and features of remedy in the judicial procedures,
- media law,
- international protection of human rights,
- law of peaceful settlement of international disputes,
- basic issues of conservation and restoration of international peace and security,
- the development of European integration,
- fundamentals of EU-policies,
- the conceptual and dogmatic problems of good faith in modern private law.

Since its establishment our doctoral school has organized four conferences: Requirements of quality legislation (December 2008), 20 years of constitutionality (May 2009), the medium-level public administration (December 2009.), and the autonomous region of Vojvodina – with consideration of the EU-accession and minority rights (Szabadka-Subotica, April 2010).

Some of our publications: 20 years of constitutionality - CD-ROM (Annex 3, 2009 of the Faculty's journal 'Jog-Állam-Politika') and further conference-publications, annuals.

The doctoral school has 32 active students in the autum semester 2010/2011. 8 students have graduated so far from the School. Since 2008 4 of our PhD-students acquired the PhD-title, and 2 persons have been conferred the degree.

CORE MEMBERS OF THE SCHOOL:

Dr. Vanda Lamm,
corresponding member of the MTA (Hungarian Academy of Sciences),
Dr. Barnabás Lenkovics CSc.,
Dr. András Patyi PhD.,
Dr. Gábor Sulyok PhD.,
Dr. Péter Szigeti DSc.,
Dr. István Vavró DSc.,
Dr. Imre Verebélyi DSc.

Head of the Doctoral School:
Dr. Imre Verebélyi university professor,
doktisk.jog@sze.hu

Research groups, research centres

SYSTEM THEORY RESEARCH GROUP
(Faculty of Engineering Sciences)

In 2010 - beyond the support of the system theory research and applications - the aim of the research group, established in the Faculty of Engineering Studies of Széchenyi István University with special rectorial support, is to perform independent theoretical researches (mathematical, technical, econometrical, etc.) on the different areas of system theory and control science. Within this, the research group especially deals with theoretical and application questions of control processes of complicated systems (multivariate, non-linear, stochastic and "possibilistic"). The research group also performs active work on the development of theoretical methods of intelligent engineering and computational systems, applied in the field of transport and infrastructural research, furthermore on the development and solution of system theory problems, connected to physical measurements of modern telecommunication research.

Head of the research group: Prof. Dr. Péter Várlaki DSc. university professor

Clerk of the research group: Dr. Szilvia Nagy university associate professor, nagysz@sze.hu

SIMULATION AND OPTIMIZATION MATHEMATICS RESEARCH GROUP
(Faculty of Engineering Sciences)

The aim of the international research group - established by the subvention of the European Union and the National Development Agency, within the scope of the project, number 4.2.2-08/1-2008-0021 of the Social Renewal Operative Programme (TÁMOP) - is to perform basic researches on the fields of numerical mathematics, aimed at innovation that tends to develop quick simulations of complex physical and production systems. The application of these considerably reduces calculation time, and is able to solve simulation tasks that cannot be solved with the programmes available at present. On the one hand, suitable mathematical processes have to be developed for that, on the other hand, the possibility of running on FPGA computer, graphic card having several processors has to be established.

An important element of the project's activity is to build professional connections with the final goal of developing an international research network that – in addition to publishing the achieved results - introduces them into the university education.

Elements of the research:

- Establishment of multi- and trans-disciplinary research team
- Strengthening international research contacts
- Performing basic researches, publishing new results
- Education of young researchers, pre-doctoral applicants
- Establishing innovations
- Maintaining the research group with research and development and innovation (K+F+I) projects, based on the achieved results

Research programme director: Dr. Zoltán Horváth college professor, horvathz@sze.hu

Project homepage: http://tamop422.sze.hu

INFORMATION SOCIETY EDUCATION- AND RESEARCH GROUP (ITOK)
(Kautz Gyula Faculty of Economics)

The Information Society Education- and research Group (ITOK) began operating on the basis of the cooperation between the Budapest University of Technology and Economics (BME) and Széchenyi István University (SZE) in 2002.

The activities of the ITOK would like to contribute to the more anthropomorphous application and development of information and communication technology, the increase of consciousness towards questions of the information society, and also assuming the project leader and advisory role, in addition to research and education role. The aim of the group is to provide an institutional background, communication medium and suitable infrastructure for novel cooperative knowledge-producing processes, ensure an area for encouraging and facilitating new ideas, creating the largest possible public forum for questions that are considered crucial for the information society and the connecting technological questions.

One of the main principles of the research is the research of mobile, personal info-communication solutions that have not lived up to the expectations of market researchers and manufacturers so far. Neither the devices, nor the contents, that utilize them are popular within the market. Despite this the manufacturers still develop very similar products that have better technical parameters. The research performed by ITOK clearly shows that it is not a problem of a technical nature, but rather other tool concepts have to be developed in principle because of the real limitation in the spread of mobile devices has a low level of applicability. For better service for the users both the display and the input devices have to be radically transformed and can also be implemented with the subassemblies that are available today.

The other principal programme is the development of the built-in info-communication solutions (AAL) in the field of the automotive industry, measuring technology, health and therapy and illuminating engineering. The greater part of the research is conducted within the framework of the winning tender of the National Technological Programme, and falls in the disciplines of integrated mechatronic and IT environment development, for the home nursing of chronically ill child patients.

Currently the research will start in the topic of novel application of super computers. It will first address the questions of energy efficiency in which results can be expected that are internationally valuable.

In the course of its research-development activity, the ITOK cooperates not only with regional and other Hungarian units of international blue chip companies but it has established promising partnerships and business relations with several national small and medium-sized enterprises.

Head of the research group: Dr. Gábor Élő PhD. university associate professor, elo@sze.hu

CENTRAL-EASTERN-EUROPEAN AND BALKAN RESEARCH CENTRE (KEBA CENTRE) (Kautz Gyula Faculty of Economics)

The Central-Eastern-European and Balkan Research Centre - that was formed in 2009 - is an independent research unit, operating as a part of the Kautz Gyula Faculty for Economics of Széchenyi István University. The centre takes part in the activity of the Regional- and Economic Doctoral School, and also has connections in regards to research with the West-Hungarian Scientific Institute of the Regional Research Centre of the MTA (Hungarian Academy of Sciences).

The centre's research activity follows an interdisciplinary process, approaching it from the direction of economic science, geographical science, political science, geopolitics and also from social science into a geographically defined area of states, group of states, and regional units, under the state level. Besides the examination of the definitive "Central-Eastern-Europe" and "Balkan" with consideration to the connection-system of the area, the geographical borders of obtaining knowledge have to be extended to "Far-East-Europe".

The directions of the research are to promote the improvement of the educational-research work - and the deepening of it in specific areas - of the faculty, especially in the doctoral school. The centre pays special attention to the students of the doctoral school, promoting their scientific

progress, initiating them into the implementation of research projects and other activities utilizing their system of contacts and information transfer. The centre would like to organically connect to the masters courses, specifically in international economics and management, as well as the regional- and environmental economics programmes.

Within the framework of the operation of the research centre the curriculum, necessary for both the Central-European Studies (BSc), the regional processes of Central- and Southeastern Europe (MSc) and PhD training, has been developed extensively. Furthermore the members of the centre have taken an intensive part in the preparation of the Hungarian section of the Danube Strategy of the European Union.

HEAD OF THE RESEARCH GROUP:
Prof. Dr. Miklós Losoncz DSc. Jean Monnet professor, vice-dean
CONTACT: Dr. Tamás Hardi PhD. university associate professor, hardit@rkk.hu

WATER ENVIRONMENT TECHNOLOGIES AND STRATEGIC SERVICES RESEARCH CENTRE (KAUTZ GYULA FACULTY OF ECONOMICS)

The centre utilizes multidisciplinary analysis and organization of innovation management of strategic services - especially water technologies - in the focus of its research activity. So the centre serves as the organizational framework of multidisciplinary research of innovation strategies and objectified resources. Within the framework of the research centre, empiric researches are performed in the field of technological management (in particular the field of innovation), technomanagement (in the are of strategy) and in innovation management.

The technology scanning, searching for, identifying, evaluating of new technological possibilities, managing of R&D projects, organizing technological networks, and performing technological cost analyses are part of the successful innovation management tasks of the research centre, which was formed in 2008. The results are represented by the following list of projects and reference companies that are listed as examples of successful R&D projects:

- Research of utilization possibilities of wastes with fat content
- Development of sewage purification technology on the basis of bacteriological researches
- Examination of anaerobic biogas productive and destructive processes and the increase of efficiency, intensification of anaerobic digestive equipment
- Research of nematode infection and disinfection experiments
- Research of intensification of ammonia-elimination

Our partner companies are Pannon Water Ltd., North-Transdanubian Water Works Ltd, Vasi Water Ltd., and Bakonykarszt Ltd.

In addition we are also concerned with technology network organization, within this topic between 2009 and 2010 we have held continuous vocational trainings in the following cities: Győr, Budapest, Debrecen, Szeged, and Siófok.

HEAD OF THE RESEARCH GROUP:
Dr. Ilona Papp university associate professor, vice-dean, pappi@sze.hu

Research Organization

Vehicle Industrial Regional University Knowledge-centre (JRET)

IT President: Dr. Imre Czinege
Position: University professor

Contact information:
Telephone: +36 96 613 680
E-mail: czinege@sze.hu
Homepage: www.jret.sze.hu

Research profile:

– Research of computer aided design, and product development (CAD-FEM)
– Research of computer aided production, and technology development (CAM)
– Research of computer aided quality management and development of quality management tools (CAQ)
– Establishment of integrated knowledge management and product development system - connecting to the CAE activity - at the consortium partners (IPD)
– Technology transfer and utilization (TT)

Applied Methods / Special tools:

– Simulation software of technological processes (formation of sheet-, volume-, and plastic)
– Simulation software of the production process (process optimisation)
– Geometrical shape- and topological tests (concentricity, texture depth testing machine)
– Metallographic tests (scanning electron microscope, optical microscope)
– Mechanical material tests (tensile-testing machine, hardness- micro hardness measurement, sheet testing machine)
– Chipping (4D lathe-centre)
– Mechanical technologies (water torch, micro plasma welder)

Services:

– Design and diagnostics of vehicle industrial fittings (finite element analyses, sound- and vibration diagnostics)
– Geometrical measurements: 3D digital, optical, laser- and coordinate measuring technology, surface topological examinations
– Material tests: plasticity tests, local deformation measurements, cleanness tests
– Planning multiaxial turning, water jet cutting
– Computational simulation of technological processes (formation of sheet-, volume-, and plastic)

List of references:

Research projects:

1. Vehicle Industrial Regional University Knowledge-centre

Type: NKTH (National Office for Research and Technology) Pázmány Péter Programme
Aim: To perform vehicle industrial researches
Tasks, performed by the Knowledge-centre: Computer simulation, development of vehicle industrial technologies, production optimization
Duration: 2005-2008
Consortium partners: Rába Axle Ltd, Sapu Lp. (Visiocorp), Borsodi Műhely Ltd.

2. Integrated Vehicle Industrial Product and Technology Development System (IJTTR_08)
   Type: NKTH (National Office for Research and Technology) National Technological Programme
   Aim: To develop CAD-CAM-CAQ-IPD
   Tasks, performed by the Knowledge-centre: Technological simulation, heat treatment, CNC machining, measurement, quality management
   Duration: 2009-2012
   Consortium partners: Rába Axle Ltd., HNS Technical Developer Ltd., Borsodi Műhely Ltd.
3. Development of Integrated Mechatronics and Information Technology Environment for Home Care of Children having Chronic Illnesses (INFCARE8)
   Type: NKTH (National Office for Research and Technology) National Technological Programme
   Aim: To develop the AAL – „Ambient Assisted Living" programme for promoting life style, with the assistance of info communication tools
   Tasks, performed by the Knowledge-centre: Video-surveillance system, intelligent sick-bed modules, development of mobile diagnostic head assembly, Middleware system shell
   Duration: 2009-2012
   Consortium-leader partner: HUMANsoft Ltd.
4. Mobility and Environment: vehicle industrial, energetic and environment researches in the Central- and West-Transdanubian region
   Type: TÁMOP (Social Renewal Operative Programme) 4.2.1.B. Programme
   Aim: To perform basic research of materials science and vehicle mechatronics researches in the field of internal combustion engines and fuels
   Tasks, performed by the Knowledge-centre: Scientific coordination of the project
   Duration: 2010-2012
   Consortium partners: Pannon University

Contract research:

GM Powertrain, Linamar, Alcoa Köfém

Keywords:

CCAD-CAM-CAQ, finite element analysis, production technology, sheet-, volume formation, measuring technology, process simulation and optimization, medical technological researches, info communication and mechatronics tools



FACULTY OF ENGINEERING SCIENCES
BAROSS GÁBOR
INSTITUTE OF BUILT ENVIRONMENT AND TRANSPORT
DEPARTMENT OF ARCHITECTURE AND BUILDING CONSTRUCTION

HEAD OF DEPARTMENT: Dr. Attila Koppány
POSITION: University professor

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RESEARCH PROFILE:
- Building structures
- Building materials
- Structural design
- Construction pathology

APPLIED METHODS / SPECIAL TOOLS:
- Structure development, application of the methodology of morphology
- Application of building diagnostic, structure registration, parameters of state determination methods
- Material science research, measuring, evaluation of material properties
- Equipment of building material laboratory
- Lambda sampling probe

REFERENCES:
Research project:

Development of methodological tools, effectively promoting the planning mechanism of building maintenance processes

Type: Internal Research Principal Direction

Aim: To determine the necessary technical tasks to be undertaken on all buildings that exist within Hungary and the prioritization of these tasks

Tasks, performed by the Department: Determination of diagnostic methodology; analysis of structure registration theory and practice; data processing, determination of tasks.

Duration: 2008-2009



KEYWORDS:
building structures, building materials, structural design, structure development, morphology, construction pathology, building diagnostics

FACULTY OF ENGINEERING SCIENCES
Department of Urbanism and Architectural History

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Research profile:

– Reconstruction of historical cities, development of methodology
– Development of technologies of local protection
– Architecture of the 19th and 20th centuries
– Enlargement within contemporary architecture
– The inventory of round churches in the Carpathian basin
– Research and assessment (by settlements) of sacral and historical small artifacts (crucifixes, statues, chapels)
– Sustainable urban planning
– The prospects of the national theory and practice of urban development
– Reconstruction of urban squares, development of protection methods

References:

Research project:

ASPIS (Auditing of Sustainability of Public Spaces)

Type: EU project 505551-LLP-2009-1-GRKA3-KA3MP
Aim: To create sustainable development of public grounds
Tasks, performed by the Department: Development of teaching material
Duration: 2010–2012
Project partners: nine partner of seven countries, universities and research institutes, the project leader is of Greek nationality

Contract research:

Pápa (city)

Type: Chief architect
Aim: To protect historic sites and buildings
Tasks, performed by the Department: Reconstruction of historical cities, development of methodology
Duration: all year round, from 1993
Principals: Mayor's office of Pápa City



Keywords:

development of city-reconstruction methodology, technologies of local protection, sacral and historical small artifacts, sustainable urban planning, settlement development

FACULTY OF ENGINEERING SCIENCES
Department of Architectural Design

Head of department: Tamás Czigány DLA
Position: University associate professor

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Research profile:
- Abstract mapping
- Residence building design
- Public building design
- Complex design
- Interior design
- Design theory

Applied Methods / Special tools:
- Theory: lecture
- Practice: planning exercises, studio work, personal consultations, presentation evaluations, graphical processing (manual and computational), mock-up preparation
- Others: creative weeks, creative camps, exhibitions, student design tenders
- Plotter: A1
- Scanner: A4/A3
- Special modelling tools: multifunctional drill-cutter, drilling press, router table, dust collector, orbital sander, circular saw, rotary table grinder, table jigsaw

Services:
- Architectural design

References:
Contract research:

Széchenyi István University Architect Studio House
- Year of realization: 2008
- Architect designers: Attila Bodrossy DLA, university associate professor, Tamás Czigány DLA, University associate professor
- Prizes: "Prize for the architecture of the county" 2008, „Media Architecture Prize" 2009



Keywords:
abstract mapping, residence building design, public building design, industrial architecture design, complex design, Indoor design, design theory

FACULTY OF ENGINEERING SCIENCES
Department of Environmental Engineering

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Research profile:
- Development of complex environmental state assessment methods
- Development of complex environmental management methods
- Sustainability assessment of regional improvements
- Assessment of national strategic development plans
- Development of waste management methods
- Modelling of environmental processes with Soft Computing methods
- Development of complex building energetic system

Applied Methods / Special tools:
- Building energetic analyses
- Noise level measurement: preparing noise map
- Geographical raster analyses
- ARC VIEW / ARC GIS, Spatial Analyst
- IMMI noise mapping software
- WinWatt stork
- RION-20
- RION-21
- Stereo microscope
- Microscope (4 pieces)
- Microscope-21
- Microscope BIM-136B



Services:
- Preparing analyses, evaluations (main topics: soil, water, air protection, environmental protection, waste management, energy, renewable energies, environmental technologies, as well as complex environmental status assessments, environment protection programmes, geoinformatical analyses etc.)
- Solving practical problems (e.g., energy, waste management, cleaner production within the circle of environment management, noise level measurement, preparing noise maps, etc.)
- Advising, giving support, connected to environmental protection/environmental technological projects of companies (examination of waste management, air-, water protection systems, optimization, energy re-examination)
- Advising, giving support in the field of environmental protection system solutions of companies (construction, examination and optimization of environmental management systems)
- Advising, giving support in the field of questions relating to corporate social responsibility (building strategy)

References:

Research projects:

1. Modelling of environmental processes with Soft Computing methods

   Type: OTKA (Hungarian Scientific Research Fund)

   Aim: To model environmental processes with numeric, fuzzy methods, and develop a prototype of environment analysis method

   Tasks, performed by the Department: Summarizing environmental status assessment methods, exploring the modelling methods of the transport of waste pollution, conservational biological modelling with cellular automaton methods

   Duration: 2003-2006

   Project partners: Széchenyi István University – Department of Automation, Széchenyi István University – Department of Mathematics and Computational Sciences, Széchenyi István University – Department of Physics and Chemistry

2. Environment Evaluation Programme (KÉP)

   Type: Commission of the MTA (Hungarian Academy of Sciences) and the KvVM (Ministry of Environment and Water):

   Aim: To establish a methodological development conception for the complex assessment of the environmental state of Hungary

   Tasks, performed by the Department: Defining the indicators of sustainable development, matching the indicators of sustainable development with the environmental status assessment

   Duration: 2004-2007

   Project partners: Hungarian Academy of Science, Ministry of Environment and Water

3. Country strategy, evaluation of the situation (the strategy of liveable environment)

   Type: Commission of the Ministry of Environment and Water

   Aim: To analyse and assess the national strategic development plans, create a proposal for further work

   Tasks, performed by the Department: Assessment of the state of the natural environment, the economic activity, state involvement, examination of the effects of environmental protection developments

   Duration: 2005

   Project partners: Ministry of Environment and Water

4. EURO-COOP

   Type: EU FP-6

   Aim: To create sustainable regional developments through the cooperation of regions

   Tasks, performed by the Department: Development of planning and assessment indicators of the sustainability of regional development, testing the implementation of concrete development sample programmes

   Duration: 2005-2008

   Project partners: Interdisciplinary Center for Comparative Research in Social Sciences (ICCR); Vienna Science and Technology Fund; Western Regional Development Agency; Slovak Academy of Sciences (IF-SAV), Slovakia; Bratislava Region, Slovakia; Centre Interdisciplinaire de Recherche Comparative en Sciences Sociales (CIR), France; Mairie de Paris (MdP), France; Foundation for European Scientific Cooperation (FEWN), Poland; Lublin Region, Poland; The Polish Foundation of Opportunities Industrialization Centre (OIC), Poland; Institute of Baltic Studies (IBS), Estonia; University of Manchester, UK; Technology Foundation Berlin (TSB), Germany

5. „Waste management, without limits”
   Type: HU-SK INTERREG
   Aim: To develop and disseminate waste management methods
   Tasks, performed by the Department: Waste management, assessment of actual and future legal regulations, defining tasks, examination of waste management solutions, distribution of waste management knowledge
   Duration: 2010-2011
   Project partner: Slovak University of Technology in Bratislava - Faculty of Mechanical Engineering
6. Sustainability development of regional use and development of the environment (methodological development of Strategic Environmental Examination)
   Type: Internal Research Principal Direction
   Aim: To develop a complex environmental status assessment methodology and integrated environment protection project management methodology, helping the application of it
   Tasks, performed by the Department: Complete the aims of the project
   Duration: 2009-2011

Contract research:

1. Development of Building energetic Expert System ENERGOPT
   Type: Industrial commission
   Aim: To develop a complex building energetics system, aimed at energy-saving and supporting engineering decision-making
   Tasks, performed by the Department: Creating and building a physics knowledge base and action plan
   Duration: 2010-2012
   Partners: Széchenyi István University – Department of Mathematics and Computational Sciences, Budapest University of Technology and Economics – Department of Building Energetics and Building Engineering
2. Development of integrated complex professional method, aimed at the increasing the efficiency of Environment protection projects ENVIPROM
   Type: Industrial commission
   Aim: To create a complex environmental protection project management methodology and benchmark database
   Tasks, performed by the Department: Creating a best practise database of environment projects, laying the foundation of the methodology bases of an integrated environmental protection project management method, creating prototype method and algorithmic web surface
   Duration: 2010-2012
   Partners: Audi Hungaria Motor Ltd., Audi Academia Hungaria Ltd.

KEYWORDS:
environmental state assessment, modelling environmental processes, sustainability assessment, waste management methods, building energetic system, project management method



FACULTY OF ENGINEERING SCIENCES
Department of Transport Infrastructure and Municipal Engineering

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Research profile:
- Design, technology and materials of road pavements
- Railway construction and maintenance technologies
- Transportation planning, traffic engineering, road safety

Applied Methods / Special tools:
- On-site and laboratory tests
- Testing equipment for road-construction (e.g., asphalt gyrator, wheel tracking test device, dynamic shear rheometer)
- Surveying equipment
- Particle Flow Code 3D discreet element modelling software
- TransCAD transport network planning software

Services:
- testing of road construction materials and structures, preparing expert opinions
- testing of railway bed and ballast structures, preparing expert opinions
- transport network development studies, road safety inspections and audits
- trainings on the above mentioned topics

References:
International research projects:

1. EU-Asia Network of Competence Enhancement of Traffic Safety on Roads
   Type: EU-Asia cooperation project
   Aim: To improve the expertise at Chinese and Thai Universities
   Tasks, performed by the Department: Performing researches and developing the educational materials in the field of road safety
   Duration: 2005-2008
   Project partners: Bauhaus Universitat Weimar, Beijing University of Technology, Prince Songkla University
2. Trendy Travel - Emotions for Sustainable Transport
   Type: Intelligent Energy – Europe Programme
   Aim: To promote the use of energy saving forms of transport
   Tasks, performed by the Department: Developing the evaluation method, organizing campaigns, serving the promotion of bicycle traffic
   Duration: 2007-2010
   Project partners: Cork City Council, AGEAS - Salerno, City of Oradea, Energy Agen, Aarhus, AUSTRIA Mobility Research, Energy Agen, Plovdiv, Nederland Spoorwegen, Ökoinsitut Südtirol, City of Martin, Vilnius Health Bureau, BUS -Consulting, Lisbon

3. Improving Road Traffic Safety in Thailand: A Common Challenge for European and Thai Universities
   Type: EU-Thailand cooperation project
   Aim: To improve the road safety of Thailand
   Tasks, performed by the Department: Developing design methods of signalised junctions and roundabouts in Thailand, guidelines and education
   Duration: 2009-2010
   Project partners: Bauhaus Universitat Weimar, Asian Institute of Technology Bangkok, Thammasat University, Prince Songkla University
4. ASPIS: Auditing the Sustainability of Public Spaces
   Type: EU Lifelong Learning Programme
   Aim: To implement the ICT-based innovative studying methods for the designers of public spaces
   Tasks, performed by the Department: Developing the quality evaluation methods of public spaces, preparing teaching-materials
   Duration: 2010-2012
   Project partners: Prisma Centre For Development Studies (GR), Universitat de Valencia (ES), MTA RKK, Minicassettes Metropolitan University (UK), Hogeschool voor Wetenschap & Kunst (BE), imaginary srl (IT), Estonian University of Life Sciences (EE)

Contract research:

1. Determination of rheological properties of hot mix asphalts, based on the complex modulus and fatigue resistance
   Type: Contract research
   Aim: To identify the performance properties
   Tasks, performed by the Department: Directing the research, performing and evaluating the examinations, performing research, documenting results, performing local inspections and examinations, coordinating activities
   Duration: 2008-2009
   Client: Magyar Közút non-profit company (Kht.)
2. Research of performance properties of normal and modified bitumen, used in road construction industry, by exploring their rheological properties
   Type: Contract research
   Aim: To search for the effects and connections in the properties of asphalt mixes
   Tasks, performed by the Department: Directing the research, performing and evaluating the tests, performing research, documenting results, performing on-site inspections and examinations, coordinating activities
   Duration: 2008
   Client: COLAS Inc.
3. Laboratory evaluation of water sensitivity with stiffness and deformability properties
   Type: Contract research
   Aim: To identify the performance properties
   Tasks, performed by the Department: Directing the research, performing and evaluating the tests, performing research, documenting results, performing local inspections and examinations, coordinating activities
   Duration: 2006-2007
   Client: Swietelsky Construction company Ltd.

4. Determination of modulus and fatigue resistance of hot asphalt mix and evaluation of results of different fatigue test methods
   Type: Contract research
   Aim: To identify performance properties
   Tasks, performed by the Department: Directing the research, performing and evaluating the tests, performing research, documenting results, performing local inspections and examinations, coordinating activities
   Duration: 2006
   Clients: HTPA/Strabag Inc., COLAS Inc.
5. Development of carbon fiber asphalt
   Type: Contract research
   Aim: To creating asphalt with a long service-life
   Tasks, performed by the Department: Directing the research, performing and evaluating the tests, performing research, documenting results, performing local inspections and examinations, coordinating activities
   Duration: 2006
   Client: Magyar Közút Inc.
6. Evaluation of deformation resistance of asphalt roads
   Type: Contract research
   Aim: To establish the technology of national TIR routes for increased (115 kN) axle loads
   Tasks, performed by the Department: Directing the research, performing and evaluating the tests, performing research, documenting results, performing local inspections and examinations, coordinating activities
   Duration: 1994-2010
   Clients: ÁKMI non-profit company, Magyar Közút Inc., Vianovaplan Ltd., Swietelsky Construction company Ltd., Viadom Inc.
7. Development of a new, up to date railway platform-element family
   Type: Contract research
   Aim: To prepare a tender
   Tasks, performed by the Department: Collecting new international specifications, developing a series of criteria, preparing a tender
   Duration: 2006-2008
   Client: MÁV Inc.
8. Application of geogrids for stabilization of railroad track ballast
   Type: Contract research
   Aim: To establish scientific application conditions
   Tasks, performed by the Department: Researching the geogrid / ballast material connection with laboratory measurements, full-scale tests, computational analysis
   Duration: 2009-2010
   Clients: MÁV Inc., TENSAR Co.
9. Comparing the costs of surplus railway traction energy caused by speed-restriction signals with the reparation costs of the railway infrastructure defects
   Type: Contract research
   Aim: Developing a cost reduction proposal
   Tasks, performed by the Department: Measuring the energy consumption of locomotives, calculating the energy consumption, maintenance costs, and performing cost-comparisons
   Duration: 2009-2010
   Client: MÁV Inc.

10. Road safety audits

Type: Contract research
Aim: To improve the safety of public roads
Tasks, performed by the Department: Developing and educating road safety audit methodology
Duration: 2004-2010
Clients: Ministry of Economy and Transport, Coordination Center for Transport Development

11. Examination of safety effects of road infrastructure interventions

Type: Contract research
Aim: To improve the safety of roads
Tasks, performed by the Department: Performing statistical analysis of the effects of interventions, choosing the most effective methods, identifying the reasons of deterioration
Duration: 2007-2010
Client: Magyar Közút Non-profit Inc.

12. Road safety inspection of dangerous locations

Type: Contract research
Aim: To improve the safety of roads
Tasks, performed by the Department: Preparing road safety inspections
Duration: 2010
Client: Coordination Center for Transport Development

13. National and local bicycle-traffic development projects

Type: Contract research
Aim: To improve the conditions of bicycle-transport
Tasks, performed by the Department: Conducting surveys, performing analyses, creating network development proposals, preparing strategic proposals
Duration: 2005-2009
Clients: Ministry of Economy and Transport, Mayor's Office of Győr City Authority

14. Parking studies

Type: Contract research
Aim: To improve the conditions of parking
Tasks, performed by the Department: Conducting surveys, performing analyses, creating fee system modification proposals, preparing city-planning regulation proposals
Duration: 2005-2009
Client: Mayor's Office of Győr City Authority



KEYWORDS:
design, technology and materials of road pavements, railway bed and ballast, transportation planning, traffic engineering, road safety

FACULTY OF ENGINEERING SCIENCES
Department of Transport

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Position: University associate professor

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Research profile:
- Evaluation, development and planning of public transport systems
- Transport and traffic modelling
- Legal and economic regulation of public transport
- Demand responsive transport systems
- Quality of public transport services
- Railway operation improvements
- Surveys on naval infrastructure
- Transport safety researches

Applied Methods / Special tools:
- VISUM software
- VISSIM software
- PC-Crash software package
- Viriato software package
- Open Track software package
- Traffic count data recording appliances with data processing software

Services:
- Surveying and evaluating the public transport system of cities, developing a concept adapted to the specific municipality
- Planning, evaluation and development of public transport operational processes
- Planning demand responsive transport systems
- System approach planning, methodological development, modelling and optimisation of vehicle-turns and assigning personnel
- Development of traffic control systems, researches towards establishing automated controlling
- Quality management of transport service providers
- Development of models and modelling methods required for evaluation of networks
- Simulation modelling and effect analysis of traffic flows on railway and public road infrastructure
- Preparing effect analyses on railway operation
- Analysis and development of infrastructure-technology-timetable conformity
- Traffic surveys, development of survey methods
- Railway operation safety assessments
- Surveys on naval infrastructure
- Planning sea transport assignments
- Evaluation and development of transport market regulation models, railway regionalisation

References:

Research projects:

1. CONNECT (Coordination of concepts for new collective transport)

   Type: Applied research

   Aim: To carry out research in reference to a new form of public transport

   Tasks performed by the Department: Analysing the potential of the business module, preparing methodological and educational material

   Duration: 2002-2004

   Project partners: ATAF SpA., Mobility Authority, Florence Metropolitan Area (IT); ATF Angus Transport Forum (UK); BOKU Institute for Transport Studies, University of Bodenkultur (AT); D&O Diepens and Okkema (NE); ETRA Investigación y Desarrollo, s.a. ES); ETTS European Transport and Telematics Systems Ltd (IE); ISDEFE Ingeniería de Sistemas para la Defensa de España s.a. (ES); LOC Logistik Centrum Väst AB (SE); LTCON LT Consultants Ltd (FI); MEMEX MemEx S.r.l. (IT); MSF Mobisoft Oy (FI); OGM Organisation Gestion Marketing s.a. (BE); POLIS Polis, (BE); RCAUEB Research Centre of the Athens University of Economics and Business (GR); ROSE Communications s.l. (ES); SOFTECO Softeco Sismat SpA (IT); TRG Transportation Research Group, University of Southampton (UK); TRITEL NV (BE); TUCechnical University of Crete (GR); VO Versio Oy (FI); VTT Technical Research Centre of Finland (FI)

2. MASCARA

   Type: Applied research

   Aim: To evaluate DRT technologies, assisting in the realisation of new DRT services

   Tasks performed by the Department: Planning of a DRT system for a domestic region, evaluation

   Duration: 2005-2007

   Project partners: Cork City Counsil (IE); FEUP University of Porto (POR); University of Ghent (BE); Tuusula Municipality (FIN); ATF Angus Transport Forum (UK); SITA Spa (IT); Korsisaari (FIN); ETTS European Transport and Telematics Systems Ltd (IE); MEMEX MemEx S.r.l. (IT); TRITEL NV (BE)

3. Research tender

   Type: Applied research

   Aim: To conduct a complex impact assessment on the development of public transport and to establish a methodological framework for the demonstration and evaluation of impacts

   Tasks performed by the Department: the entire project

   Duration: 2001

   Principals: Ministry of Environment

Contract research:

1. Contract Research

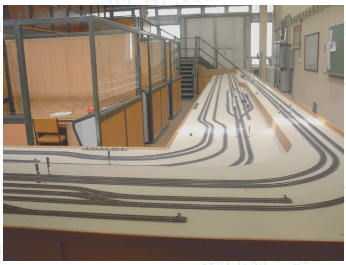
   Type: Industrial commissions

   Aim: To develop local public transport

   Tasks performed by the Department: Surveying the state of local public transport of more than 20 cities and preparing development plan (including Győr, Szombathely, Veszprém, Dunaújváros, Tatabánya, Eger etc.)

   Duration: 1990-2009

   Principals: Transport service providers and local governments



2. The prospects of urban public transport service development with a model adapted to Zalaegerszeg
   Type: Applied research
   Aim: To review the methods of forecasting travel demand towards public transport systems and to model and evaluate those systems
   Tasks performed by the Department: the entire project
   Duration: 2008
   Principals: Zala Volán Zrt
3. Contract Research
   Type: Applied research
   Aim: Taking accident-related factors into account when evaluating the development of public transport
   Tasks performed by the Department: Determining the scale of the risk of accidents in public transport
   Duration: 2004
   Principals: Ministry of Transport
4. Contract Research
   Type: Applied research
   Aim: To create an intelligent management system based on telematics for the local public transport of Győr
   Tasks performed by the Department: the entire project
   Duration: 2006
   Principals: Kisalföld Volán Zrt.
5. Contract Research
   Type: Applied research
   Aim: To develop models applicable to public transport services of regions with fragmented settlement structure, based on the example of Baranya county
   Tasks performed by the Department: Developing the service model
   Duration: 2008
   Principals: Ministry of Transport, Telecommunication and Energy
6. Contract Research
   Type: Applied research
   Aim: To revise and modernise the public transport of Mosonmagyaróvár and its sub-region using an innovative and holistic approach in order to improve economic efficiency and the level of service
   Tasks performed by the Department: the entire project
   Duration: 2007-2008
   Principals: Ministry of Economy and Transport, Local Government of Mosonmagyaróvár, Micro-regional association of Mosonmagyaróvár, Kisalföld Volán Zrt. (transport service provider)
7. Contract Research
   Type: Industrial commission
   Aim: To support the technical reconstruction of railway line No. 30 by carrying out traffic and railway operational survey
   Tasks performed by the Department: Conducting traffic/passenger count and performing technical and safety inspections
   Duration: 2008
   Principals: Ring Engineering Office

KEYWORDS:
public transport, transport networks, transport-traffic modelling, railway operation, demand responsive transport systems

FACULTY OF ENGINEERING SCIENCES
Department of Logistics and Forwarding

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Position: University associate professor

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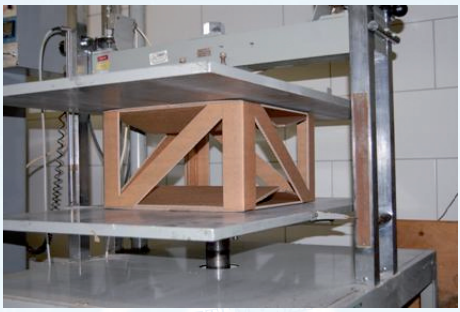
Research profile:



- Fixing technology
- Loading unit-forming
- Packaging technology development
- Environmental management aspects
- Distribution logistics
- Transport Systems
- Transportation
- Logistic information technology developments
- Development of metalogistic systems
- Production-logistics developments

Applied Methods / Special tools:

- Conditioning cabinet Brabaender KKE 10.000/70 N
- Combined vibrotable MTS 840
- Sunfastness examination equipment, Xenontest 450 C804
- Electrostatic examination equipment, CEAST - CE-UM-351
- Paragon Software System - software
- Em-Plant software
- Witness software
- TIR software

References:

Research projects:

1. ReginsRFID

   Type: Interreg IIIC

   Aim: To introduce and examine the implementation possibilities of radio frequency identification methods for small and medium-sized enterprises

   Tasks, performed by the Department: Organizing the RFID-topic workshops for the surrounding small and medium-sized enterprises, examining the utilization and introduction opportunities in the case of national small and medium-sized enterprises

   Duration: 2005-2006

   Project partners: KLOK Competence Centre Logistics Kornwestheim, IHK Stuttgart, Varese Chamber of Commerce

2. Corelog (Coordinated Regional Logistics)

   Type: Interreg IIIB

   Aim: To examine the logistics effects of governmental and regional measures in the affected member states

   Tasks, performed by the Department: Examining the national governmental and regional logistics regulations, measures, organization of workshops, preparing international comparisons

Duration: 2006-2007
Project partners: Regione Emilia Romagna, University of Maribor, Aristotle University of Thessaloniki, Heraklion Port Authority

Contract research:

2. Development of consolidated goods delivery
   Type: Industrial commission
   Aim: To develop the consolidated goods delivery with innovative and applied tools
   Tasks, performed by the Department: Analysing the consolidated goods delivery, performing market research, revealing market trends, creating new models to implement the activity, performing practical examinations of the new models
   Duration: 2008
3. Examination of integrated carriage of passengers and goods
   Type: Industrial commission
   Aim: To develop the distribution model of integrated carriage of passengers and goods within the international public transport
   Tasks, performed by the Department: Examining the distribution activity of international carriage of passengers and goods, modelling, developing new and more effective models, performing practical examinations and application options of these
   Duration: 2009
4. Re-examination of delivery packaging of loading units, produced with different fixing technology
   Type: Industrial commission
   Aim: To re-examine the loading unit-formation and possible increase of in consumer packaging within the loading unit
   Tasks, performed by the Department: To perform suitability tests of experimental loading units developed by the partner, performing simulation of logistics utilisation
   Duration: 2007
5. Packaging technology development of electronic fittings, considering aspects of environmental management
   Type: Industrial commission
   Aim: To re-examine the complete product packaging system
   Tasks, performed by the Department: Performing suitability tests of experimental packaging developed by the partner, performing simulation of logistics utilisation, considering the principle of material minimization
   Duration: 2007
6. Re-examination and development of transport and packaging systems
   Type: Industrial commission
   Aim: To re-examine the packaging systems with the aim of better capacity utilization of the collective packaging
   Tasks, performed by the Department: Developing the suitable product placement variations in favour of better volume and mass utilization
   Duration: 2007

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Keywords:

fixing technology, loading unit-forming, packaging technology, environmental management, distribution logistics, transport systems, transportation, logistics information technology, metalogistics systems



FACULTY OF ENGINEERING SCIENCES
Department of Structural Engineering

Head of department: Dr. Viktor Molnár
Position: University associate professor

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Research profile:

- Development of bridge management systems (public road, railway, municipality)
- Structure diagnostic examinations
- Development of pile foundations
- Modelling of the soil-structure interaction

Applied Methods / Special tools:

- Development, utilisation of bridge management software
- Application, analysis, evaluation, development of theoretical and practical structure diagnostic examinations
- FEM-software application (PLAXIS, MIDAS GTS, AXIS)
- Development of laboratory soil investigations (cyclic/dynamic triaxial equipment, resonant column device)
- Development of pile resistance test procedures and tools (hydraulic jack, load- and displacement measures devices, CATMAN data processing software)

References:

Research project:

Laboratory development

Type: TIOP-1.3.1-07/1-2F-2008-0003

Aim: To determine the dynamic properties of soils with laboratory equipment for earthquake design of the structures, to improve the planning and designing methods of earthworks for public infrastructure and advanced foundation structures

Tasks, performed by the Department: Preparing procurement of tools (cyclical/dynamic triaxial device), own development of tools (resonant column device), soil dynamics studies

Duration: 2009-

Project partners: MÁV Inc., Road Management and Coordination Directorate (UKIG), National Public Road Technical and Information non-profit company (ÁKMI) (ad hoc principals)

Contract research:

1. Development of public road bridge management system, development of MÁV bridge management system

Type: Industrial commission

Aim: To optimize the utilisation of funds assigned for the maintenance of bridges on public roads and railways

Tasks, performed by the Department: Planning bridge management systems, creating a bridge management database, performing on-site surveys, creating a condition assessment system, analysing the deterioration process, creating a bridge assessment system, ranking, optimising processes

Duration: 1999-2005 and from 2001

Principals: Road Management and Coordination Directorate (UKIG), National Public Road Technical and Information non-profit company (ÁKMI), Ministry of Traffic, Telecommunication and Water Management; MÁV Inc.

2. Application, analysis, evaluation, development of theoretical and practical structure diagnostic examinations

Type: Industrial commission

Aim: To analyse the condition dependent behaviour of supporting structures, to compare the real structures and computational models, to improve models by avoiding faults, inaccuracies, and unjustified details

Tasks, performed by the Department: Performing static-dynamic resistance test, analysing and evaluating the finite element modelling with the utilisation of actual measurement results, analysing, evaluating the supporting strength and service-life effect of structural faults

Duration: Continuous

Principals: Magyar Közút Non-profit Inc., other ad hoc industrial principals

3. Sub-programme of the Cooperation Research Centre for development of Bridge Substructure Designing Methods

Type: Industrial commission

Aim: To develop advanced bridge abutments and foundations, corresponding with more economic technologies and the new European standards (Eurocodes), using modern 3D and improved 2D softwares

Tasks, performed by the Department: Analysing the reliability of pile design, completing comparative evaluation of pile designing methods, performing resistance tests, developing the processing, performing, complex modelling of bridge supports, joining earthworks and other geostructures

Duration: 2004-

Principals: Hídépítő Inc., HBM Soletanche Bachy Ltd.

Keywords:

bridge management systems (public road, railway, municipality), structure diagnostics, pile foundation, bridge abutments, earthworks, modelling of soil-structure interaction



FACULTY OF ENGINEERING SCIENCES
JEDLIK ÁNYOS
INSTITUTE OF IT, ELECTRICAL AND MECHANICAL ENGINEERING

DEPARTMENT OF APPLIED MECHANICS

HEAD OF DEPARTMENT: Dr. János Égert
POSITION: University professor
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RESEARCH PROFILE:
- Solving engineering problems in statics, dynamics, vibrations and thermodynamics
- Development and application of numerical methods in engineering mechanics
- Mechanical application and development of Finite Element Method
- Computational modelling and experimental methods of the mechanics of fibre reinforced composite structures
- Numerical analysis of mechanical and thermodynamical response of viscoelastic materials

APPLIED METHODS / SPECIAL TOOLS:
- I-DEAS - Mechanical design programme system
- COSMOS/DesignSTAR Advanced - Finite Element programme system
- COSMOS/DesignSTAR Designer - Finite Element programme system
- HBM SPIDER 8 - 8 channel measuring data management system
- HBM QUANTUM MX-840 - 8 channel measuring data management system
- ZWICK 1454 material test machine

SERVICES:
- Solving industrial problems with Finite Element software
- Mechanical measuring, laboratory tests
- Mechanical modelling, mechanical studies and analyses

REFERENCES:
Research projects:

1. Mechanical foundation of the agricultural application of textile-composites
   Type: OTKA (Hungarian Scientific Research Fund)
   Aim: To analyse the problems of mechanical modelling and experimental investigation of textile-composite materials
   Tasks, performed by the Department: Determination of material properties of textile-composites by measurement, developing a finite element model-cell based on the meso structure of material
   Duration: 2005-2008
   Project partners: Szent István University - Department of Mechanics and Technical Drawing, Ministry of Agriculture and Rural Development - Institute of Mechanical Engineering in Agriculture
2. Life cycle management of metal-polymer hybrid pipes
   Type: OTKA (Hungarian Scientific Research Fund)

Aim: To investigate internal reinforcement of failures and damage of steel-pipes with composite fibre fabrics
Tasks, performed by the Department: Mechanical modelling of artificial pipe failures, finite element modelling and analysis, dimensioning of composite reinforcement
Duration: 2005-2008
Project partners: Miskolc University - Department of Mechanical Technology, Budapest University of Technology and Economics - Department of Polymer Technology

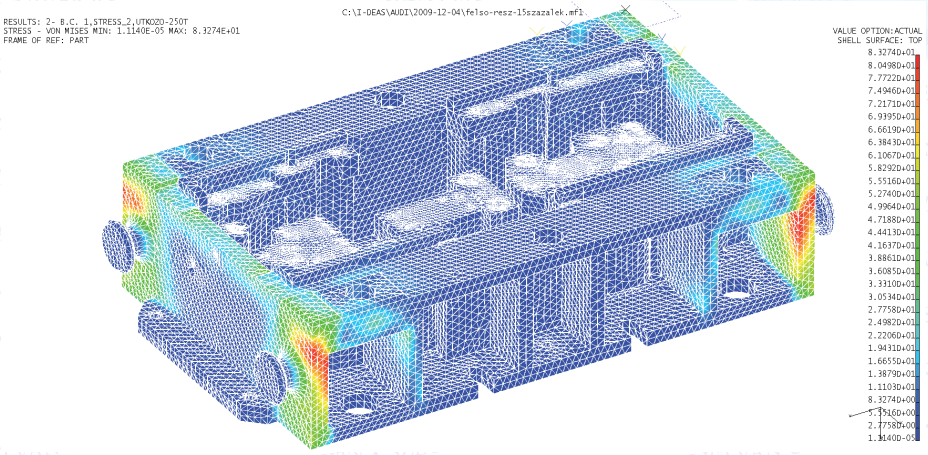
3. Integrity of hybrid pipes reinforced by polymer matrix composite
Type: GVOP AKF
Aim: To determine the critical level of pipe failures and damage, to investigate the external reinforcement opportunities
Tasks, performed by the Department: Mechanical modelling of artificial pipe failures, finite element modelling and analysis, dimensioning of composite reinforcement
Duration: 2005-2008
Project partners: Miskolc University - Department of Mechanical Technology, Budapest University of Technology and Economics - Department of Polymer Technology, Budaplast Plastic Industrial and Commercial Inc., Polinvent Developer, Contractor and Marketing Ltd.
4. Solution of non-linear engineering mechanical problems using the finite element method
Type: Post-doctoral research
Aim: To numerically analyse the mechanical response of viscoelastic materials and textile-composites
Tasks, performed by the Department: Numerical analysis of mechanical response of viscoelastic materials and textile-composites
Duration: 2007-2009
5. Mechanical modelling and simulation of internal combustion engines and vehicle structures using the finite element method
Type: Internal Research Principal Direction
Aim: To optimise internal combustion engines and vehicle structures from mechanical point of view
Tasks, performed by the Department: Modelling of engine parts, numerical analysis of vehicle structures using finite element method
Duration: 2008-2010
Project partner: Széchenyi István University - Department of AUDI Hungaria Internal Combustion Engines
6. Design and production of a car dashboard panel prototype using fibre reinforced composite
Type: BAROSS INNOREG
Aim: To participate in the design of a lightweight dashboard panel console
Tasks, performed by the Department: Literature survey, developing the mechanical model, measuring the composite material properties
Duration: 2009-2010
Project partner: MESHINING Engineering Ltd. Győr
7. Researching the industrial application possibilities of electroactive polymers
Type: BAROSS INNOREG
Aim: To study the fundamental principles of mechanical response of electroelastic plastics
Tasks, performed by the Department: Description of large deformations, non-linear response of electroactive polymers, solution of coupled electromechanical problems, using the Maxwell equations of elastic materials
Duration: 2009-2010
Project partners: Széchenyi István University - Department of Mechatronics and Machine Design, ENTAL Ltd. Győr

Contract research:

1. Thermomechanical design of sheet metal forming die
   Type: Industrial research
   Aim: To design the proper heat-distribution of a sheet metal forming die

   Tasks, performed by the Department: Finite element modelling, performing 2D thermodynamical analysis, development of the optimal shape of die
   Date: 2005
   Client: Vehicle Industrial Regional University Knowledge-centre, Győr
2. Finite element static analysis of a ceramics lined steel pipe bend
   Type: Industrial research
   Aim: To investigate the static response of pipe bends that have ceramic linings
   Tasks, performed by the Department: Mechanical modelling of ceramic materials, finite element modelling of a pipe bend, performing static finite element analysis
   Date: 2006
   Client: Ferroplan Ltd. Győr
3. Static analysis of a carbon black storage silo
   Type: Industrial research
   Aim: Non-linear analysis of a large ribbed steel structure
   Tasks, performed by the Department: Performing non-linear static finite element analysis, design of optimal shape of the structure
   Date: 2008
   Client: Olajterv Inc. Budapest
4. Dimensioning of synthetic resin die-casting moulds
   Type: Industrial research
   Aim: To determine the mechanical properties of liquid-permeable synthetic resin by measurement, finite element static dimensioning of synthetic resin moulds
   Tasks, performed by the Department: Measuring material- and strength properties, mechanical modelling of liquid-permeable synthetic resin, numerical static dimensioning of die-casting moulds
   Duration: 2009-2010
   Client: REFMON Fire-proof Material Producer Commercial and Provider Inc. Mosonmagyaróvár

KEYWORDS:
engineering statics, dynamics, vibrations, thermodynamics, finite element method, mechanics of composite materials, mechanics of viscoelastic materials



FACULTY OF ENGINEERING SCIENCES
Department of Engineering Materials and Vehicle Production

Head of department: Dr. Ibolya Zsoldos
Position: University associate professor

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Research profile:
- Material science (engineering materials, material testing, heat treatment, nanotechnology)
- Production technology (sheet-metal and volume forming, polymer technology, machining, machine tools, robots, automation, instrument design)
- Measurement technology (optical digitalization, surface topology, geometrical measurements)
- Planning of production processes (process simulation, optimization, logistics, quality management)

Applied Methods / Special tools:
- Static and dynamic material tests (measurement of stability, endurance, hardness)
- Non-destructive tests (magnetic, inductive, ultrasound)
- Metal- and polymer structural examination
- Measurement of geometrical shapes and reverse engineering (optical digitalization, CT, X ray)
- Rapid prototyping (CAD model, DMD-laser sintering)
- NC technology (5D machining centre, universal NC machines)
- Robot cell, robot programming
- Welding robot
- Examination of pressers, sheet metal forming dies
- Polymer technological and testing equipment (extruder, die-casting machine, polymer property tests)

Services:
- Research of forming processes (forming of sheet-metal, volume, and polymer)
- Research of production processes (process analysis, ergonomics, 3D factory design)
- CAD-CAM, CNC, SPC, robot simulation application
- Measurement (geometry, material structure, optical digitalization, CT X ray, 3D coordinate measurement)
- Instrument planning (spatial formation and sheet metal casting dies, implements of polymer parts – design, supported by computational analyses and tools)
- Planning surface- and heat treatment processes – performing computational simulations, experiments
- Simulation of production and construction processes (process analysis, ergonomics, 3D production planning), planning of logistics processes
- Material testing: chemical composition, metallographic, strength and hardness examinations

References:

Research projects:

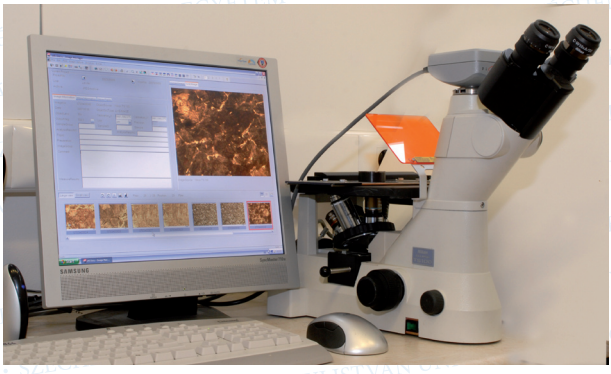
1. Co-operation Research Centre for Vehicle Industry, Electronics and Logistics
   Type: GVOP (national tender with EU subsidy)
   Aim: To coordinate corporate researches
   Tasks, performed by the Department: Developing technology, measuring, achieving production optimisation
   Duration: 2004-2007
   Principals: 22 companies (Audi Hungaria Motor Ltd., GM Powertrain Hungary Ltd., Nemak Győr Ltd. …)
2. Internationally standard training system in the field of engine: industry
   Type: Leonardo da Vinci Programme
   Aim: To teach material development
   Tasks, performed by the Department: Developing multi-level professional teaching materials
   Duration: 2006-2008
   Client: College of Ingolstadt
3. LOG4SMEs - Improving logistics performance of SMEs
   Type: INTERREG IIIC
   Aim: To compare the performance of international SMEs
   Tasks, performed by the Department: Evaluating the IT potential of small and medium-sized companies
   Duration: 2006
   Principals: University of Bergamo, Fraunhofer Institute, Stuttgart
4. Co-operation Research Centre for Vehicle Industry, Electronics and Logistics
   Type: GVOP (national tender with EU subsidy)
   Aim: To coordinate company researches
   Tasks, performed by the Department: Developing technology, measuring, achieving production optimisation
   Duration: 2008-2011
   Client: Universitas-Győr Non-profit Ltd. and a 25 member company (Nemak Győr Ltd., MOFÉM-TEKA, BPW-Hungaria Ltd, BWT, etc.)

Contract research:

Audi Hungaria Motor Ltd., GM Powertrain Hungary Ltd., Rába Axle Ltd., Magyar Suzuki Corp., Ajka Elektronics Ltd., Jako Metalgoodfactory Ltd., Dana Hungary Ltd.

Keywords:

material science, heat treatment, nanotechnology, production technology, automation, measuring technology, optical digitalization, planning of production processes, process simulation, Implement design, polymer industrial researches



FACULTY OF ENGINEERING SCIENCES
Department of AUDI HUNGARIA Internal Combustion Engines

Head of department: Dr. Mathias R. Dreyer
Position: University associate professor

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Research profile:
- Design and development of internal combustion engines
- Examination of internal combustion engines, development of measurement procedures
- Tribology of automotive engines
- Modeling, simulation, and experimental analysis of friction and lubrication phenomena related to internal combustion engines
- Development of alternative automotive drives systems
- Development of automotive industrial technologies

Applied Methods / Special tools:
- Constructional development of internal combustion engines (rotary piston engine)
- Development and implementation of complex experimental test stand
- Examination and modeling of mechanical losses of internal combustion engines
- Homogeneously charged compression ignition engines development
- Development of alternative automotive drives systems
- NI compactDAQ 9162 measurement data acquisition system
- NI DaqCard-6062 PCMCIA data acquisition card
- NI compactRIO FPGA measurement and controlling system
- NI PXI measurement data logger system
- HBM MGC amplifier
- HBM T30FN torque meter axis
- HBM T22FN torque meter axis
- HBM Spider8
- HBM W50 pick-up
- HBM K-T12-S500Q torque meter plate
- HBM QuantumX MX-840
- Kistler measuring spark plug
- Kistler dynamometer plate
- Kistler CR manometer
- Kistler 5015A1101 ChargeMeter
- Micro-Epsilon turbo charger revolution counter
- Engine brake-testing equipment
- Bruel&Kjaer Pulse hardver

Services:
- Technical developments
- Simulation, analysis of engine processes
- Engine technical examinations

– Professional training courses, company in-service trainings
– Technical advising

References:

Research projects:

1. Research project
   Type: Applied research
   Aim: To develop the prototype of a variable-stroke internal combustion engine
   Tasks, performed by the Department: Designing, constructing, building engine and dynamometer
   Duration: 2007-2008
2. Research project
   Type: Applied research
   Aim: To develop the control of a variable-stroke internal combustion engine
   Tasks, performed by the Department: Controlling strategy development, programming, engine experimental testing
   Duration: 2010-2011

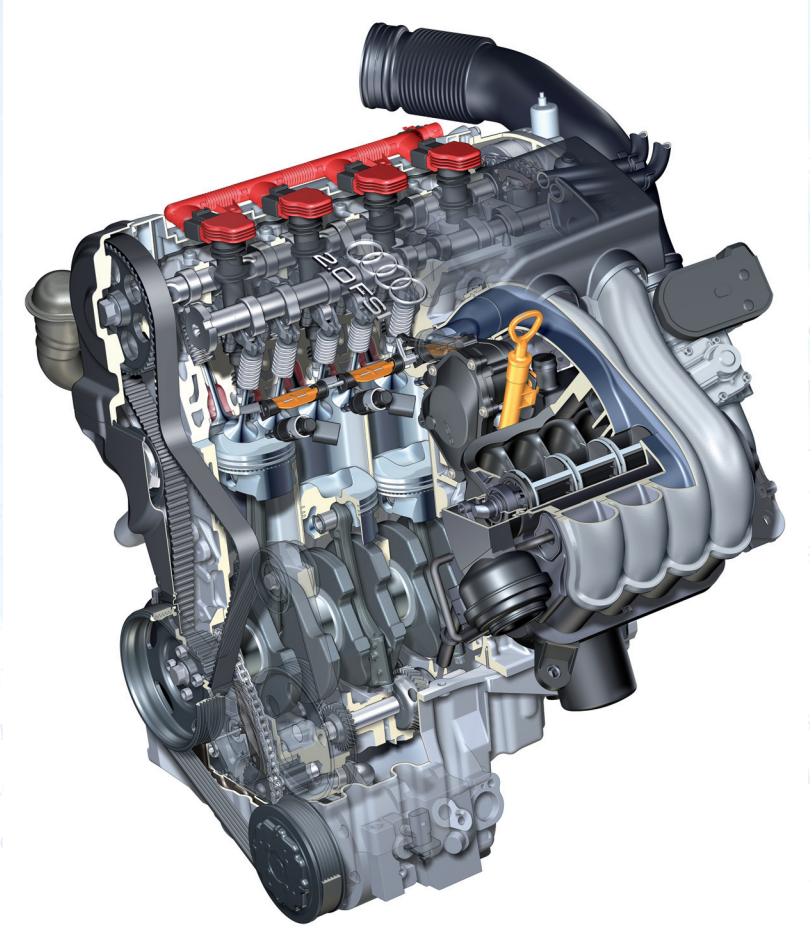
Contract research:

1. Development of low power internal combustion engine dynamometer
   Type: Industrial development
   Aim: To create an agricultural small-powered engine testing stand for MTD Hungary Ltd.
   Tasks, performed by the Department: Designing, implementing of a test station, developing the operating software
   Duration: 09.2006-03.2009
   Principals: Department of General Engineering, Motech Ltd. Mosonmagyaróvár; MTD Hungária Ltd., Nemesvámos
2. Vibration test of Allison torque converters
   Type: Industrial development
   Aim: To separate mounting errors with the help of vibration analysis
   Tasks, performed by the Department: Developing the vibration measuring special software, matching the measuring system into the final takeover test stand technology
   Duration: 03.2006-12.2006
   Principals: Széchenyi István University - Department of Automotive and Railway Engineering, GM Powertrain Hungary Ltd.
3. Research of mounting technology of the cylinder-head of third generation engines
   Type: Industrial development
   Aim: To optimize the mounting process of cylinder heads produced by the GM Powertrain Hungary Ltd.
   Tasks, performed by the Department: Developing the measurement technology of cylinder head deformations, analyzing the examination of laboratory- and procedural measurements
   Duration: 2005-2008
   Client: GM Powertrain Hungary Ltd.
4. Examination of effects of water injection on Otto-engines
   Type: Industrial development
   Aim: To reveal the effects of water injection on the burning process and on engine properties
   Tasks, performed by the Department: Thermodynamic modeling of water injection, examining the injection nozzles in the case of water, determining the necessary injection periods, testing the engine on a test stand

Duration: 02.2008-12.2009
Client: GM Powertrain Hungary Ltd.

5. Experimental measurements of exhaust pressure on a turbocharged engine
Type: Industrial development
Aim: To reveal the cold test examination options on engines instrumented with a turbo chargers
Tasks, performed by the Department: Creating the examination options in laboratory conditions with the external drive of the engine, developing the software necessary for performing the measurements, carrying out and analyzing the experimental measurements
Duration: 02.2009-12.2009
Client: GM Powertrain Hungary Ltd.

KEYWORDS:
internal combustion engine, vehicle-industrial technologies, tribology of vehicle engines, alternative vehicle drives



FACULTY OF ENGINEERING SCIENCES
Department of Automation

Head of department: Dr. Péter Keresztes
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Research profile:

- Certification of safety of railway transport systems
- Power-supply of railway transport systems
- PLC based industrial control systems
- Industrial applications of microcontrollers
- Fuzzy-communication of mobile robots
- Research of intelligent assistant robots
- Design and application of delay-insensitive logic circuits
- Computational intelligence methods and their applications
- FPGA applications in high-speed control systems
- VLSI circuit design
- Electric drives and energy feedback in mobile vehicles
- Application of resonant converters
- Research of applications of IT in automation and power electronics

Applied Methods / Special tools:

- Applications of SPICE and similar network-analysis/simulator
- Applications of VHDL hardware-description language and simulation system
- Applications of ISE FPGA development-environment
- Applications of PLC development-systems
- Applications of different MATLAB tool-boxes
- Applications of MP-LAB microcontroller development system and environment
- Applications of network analyzer for analysis of energy-supply systems
- Applications of C, C++ languages in electrical engineering
- Applications of E-PLAN CAD system
- MATLAB fuzzy-logic toolbox
- V-SYSTEM simulation system
- Xilinx ISE 10.1
- MP-LAB IDE v8.20
- E-PLAN CAD system
- CM3350 network analyzer
- Software packages and tools for development of different PLC systems (SIEMENS, PHOENIX-CONTACT, SCHNEIDER, MOELLER, OMRON)

References:

Research projects:

1. GVOP-3.2.2.-2004-07-0020/30
   Type: GVOP
   Aim: To research and develop electronic control systems and test-processes

Tasks, performed by the Department: ASIC design, application of microcontrollers, PLC control-systems, image-processing systems, DC electric drives, and automatic seat assembling technology in new generation of cars
Duration: 2004-2007
Project partner: Lear Corporation Hungary Ltd.

2. GOP-2007-112-MT F2.4
Type: GOP (Operational Programme for Developing the Economy)
Aim: To research and develop microelectronic devices in mechanical and electrical engineering.
Tasks, performed by the Department: Applications of Web and GSM based PLC systems, to research control systems in robot technology, application of microcontrollers and to design delay-insensitive and low power logical circuits
Duration: 2007-2010
Project partners: Cooperation Research Center, VILL-Age Ltd., Wittmann Ltd.
3. TIOP-1.3.1-07/1-2F-2008-0003
Type: TIOP
Aim: To research fuzzy communication of mobile robots
Tasks, performed by the Department: Providing multidisciplinary technical training-research and infrastructure development
Duration: 2007-2010
4. HUNOROB 0045/NA/2006-2/ÖP-9
Type: HUNOROB
Aim: Application of research-based innovation methods in robot technologies
Tasks, performed by the Department: Elaboration of environmental sound and competitive robot technologies; Hungarian-Norwegian research cooperation
Duration: 2007-2010
Project partners: Hungarian Academy of Science – Computer and Automation Research Institute (MTA-SZTAKI), Budapest University of Technology and Economics, Norwegian University of Science and Technology, Narvik University College PPM AS, Trondheim, Norway
5. IKTA-00002/2001 OMFB-SZTAKI-SZIF-PPKE
Type: IKTA
Aim: To design and implementation of emulated digital CNN processor array
Tasks, performed by the Department: Register-, gate- and switch-level architectural design and simulation, LAYOUT design.
Duration: 2001-2005
Project partners: Hungarian Academy of Science – Computer and Automation Research Institute (MTA-SZTAKI), Pázmány Péter Catholic University
6. Performance electronic and applied informatics researches
Aim: To cooperate in the specified areas of science between Romanian and Hungarian researchers
Tasks, performed by the Department: Creating common publications with Romanian researchers
Duration: 2002-2005
Project partners: Kolozsvár Technical University
7. OTKA (Hungarian Scientific Research Fund) K75711
Type: OTKA (Hungarian Scientific Research Fund)
Aim: To develop computational intelligence algorithms, systems and models focused on fuzzy rule-based models and learning algorithms
Tasks, performed by the Department: Application of bacterial memetic algorithms, interpolative fuzzy systems and fuzzy signatures
Duration: 2009-2012

8. TÉT P-3/07
   Type: TÉT
   Aim: To research methods of model identification and algorithms
   Tasks, performed by the Department: Defining a bacterial memetic algorithm, identifying fuzzy and neural network based models
   Duration: 2008-2009
   Project partner: Algarve University, Portugal

Contract research:

1. SIEMENS-METRO interlocking system
   Type: Industrial commission
   Aim: To reconstruct the interlocking system of METRO lines 2, 4, and to certificate the technical safety of these systems.
   Tasks, performed by the Department: To analyse the technical safety report, to check the consistency of the defined security criteria
   Duration: 2005-2010
   Client: Budapest Transport Ltd.
2. Modernization and remote control of the MÁV (Hungarian State Railways) Szabadszállás-Kiskunhalas-Kiskunfélegyháza-Kistelek electric substations
   Type: Industrial commission
   Aim: To design and implement remote control and remote monitoring
   Tasks, performed by the Department: Designing as expert subcontractor
   Duration: 2008-2009
   Principals: Prolan Inc., Hoermann Inc., Schauer Ltd., R-Traffic Ltd.
3. ALLISON-COMMISSION
   Type: Industrial commission
   Aim: To develop equipment suitable for testing the ALLISON hydraulic system
   Tasks, performed by the Department: Designing and implementing
   Duration: 2008
   Principals: General Motors, TOMOVILL Ltd., Universitas-Győr Non-profit Ltd.

KEYWORDS:
Railway interlocking systems, technical safety, industrial control systems, microcontrollers, fuzzy communication of mobile robots, VLSI design, logic circuits, computational intelligence, electric drives, resonant converters



FACULTY OF ENGINEERING SCIENCES
Department of Physics and Chemistry

Head of department: Dr. András Horváth
Position: University associate professor

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Research profile:
- Computational modelling of gas-flow problems
- Genetic algorithms
- Diagnostics of fusion plasma
- Diagnostics of nuclear reactors
- Digital signal processing
- Radio frequency identification
- Biometric identification
- Chemical examination of water, soil, waste
- Nuclear plant corrosion and contamination-decontamination researches
- Catalysis with cobalt-carbene complexes
- Protection against ionizing radiation
- Optimisation of radiation exposure of patients in medical X ray diagnostics

Applied Methods / Special tools:
- Low pressure discharge tube with Langmuir probes
- C / MATLAB / Python programme development
- LaTeX desktop publishing
- RFID applications in safety engineering and logistics systems

Services:
- Radiation protection planning, education, expertise

Referenciák:
Kutatási pályázatok:

References:
Research projects:

1. Fusion research cooperation

   Type: Collection of several research projects based on a framework agreement
   Aim: To develop measuring devices related to fusion plasmas
   Tasks, performed by the Department: Measuring technology development, developing detectors, data analysis
   Duration: 2001-
   Project partners: KFKI Research Institute for Particle- and Nuclear Physics, Centre de Recherches en Physique des Plasmas (CRPP) Lausanne, Institute of Plasma Physics AS CR (IPP-CR) Prague
2. FUSENET

   Type: Tender, won as consortium member
   Aim: To give European fusion expert training at university doctoral levels

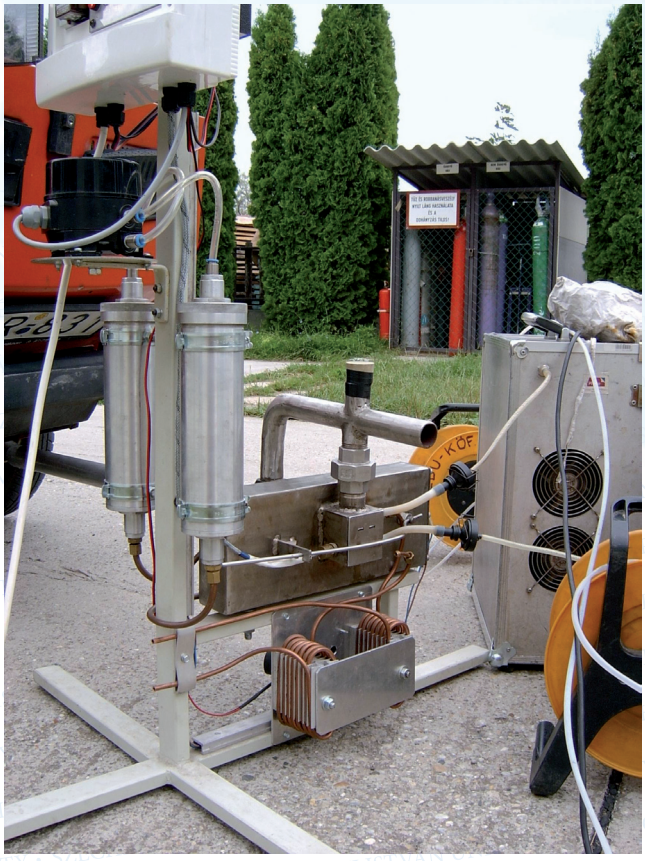
Tasks, performed by the Department: Operating and maintaining the FUSENET project portal (www.fusenet.eu)
Duration: 2008-2012
Project partners: Cooperation of 39 European research institutes and universities, financed by the European Commission (FP-7 framework programme)

3. Simulation and Optimization

Type: Basic research project participation (TÁMOP-4.2.2-08/1-2008-0021)
Aim: Numeric simulation of complex physical systems, development of methods and software. Optimization using numerical models.
Tasks, performed by the Department: Creating a physical model, programme planning, programming, comparing with measuring data.
Duration: 2009-2011
Partner: Széchenyi István University - Department of Mathematics and Computational Sciences

4. Applied nuclear physics and nuclear chemistry researches

Type: Basic research project, SZE research principal direction
Aim: To coordinate and support the nuclear physics and nuclear chemistry research of the department
Tasks, performed by the Department: Researching basic diagnostics of fusion plasmas, researching nuclear plant corrosion and contamination-decontamination, optimising the radiation exposure of patients in medical X ray diagnostics and dealing with connected topics
Duration: 2009-
Partners: Research Institute for Particle- and Nuclear Physics (KFKI RMKI), Centre de Recherches en Physique des Plasmas (CRPP) Lausanne, Institute of Plasma Physics AS CR (IPP-CR) Prague, Pannon University - Institute of Radiochemistry and Radioecology, National Centre for Healthcare Audit and Inspection, Budapest; International Atomic Energy Agency, Vienna, Austria



Contract research:

Numeric modelling of high-voltage circuit-breakers

Type: Industrial commission
Aim: To develop a software that simulates the operation of high-voltage circuit-breakers
Tasks, performed by the Department: Creating a physical model, programme planning, programming, comparing with measuring data

Duration: 2003-2005
Partners: Széchenyi István University - Department of Mathematics and Computational Sciences, GANZ Transelektro Inc.

Keywords:

modelling of gas-flow problems, genetic algorithms, nuclear reactors, diagnostics of fusion plasma, digital signal processing, radio frequency and biometric identification, reaction mechanisms and dynamics, ionizing radiations



FACULTY OF ENGINEERING SCIENCES
Department of Mechatronics and Machine Design

Head of department: Dr. Péter Horváth
Position: University associate professor

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Research profile:
- Research of applications of electroactive polymers
- Image processing
- (optical) development of sensors
- Service life examination of roller bearings
- Theoretical and experimental examination of bolted joint
- Butt on occurrences in rotors
- Active reduction of cutting forces with regulation
- Tribological examination of dry trailing
- Modelling of connected heat- and fluid mechanics problems

Applied Methods / Special tools:
- Application of ProE, Catia, AutoCad, Inventor, Solid Edge mechanical design programmes
- Knowledge of MATLAB/SIMULINK programmes
- Knowledge of ANSYS (5 person license) programme
- Knowledge of Fluent programme
- SPIDER8 Measurement data collector
- QUANTUM Measurement data collector
- HOTTINGER Measurement data collector
- SCOUT55 measuring amplifier
- PULSE LITE vibrometer
- Different force, moment, displacement (inductive, laser, ultrasound, eddy current), angular rotation, sound pressure and acceleration measuring sensors
- Signal generators
- AGILENT digital oscilloscope
- LDS V406 vibrotable
- CF DESIGN software
- Special purpose laboratory measuring configurations: spring characteristics measuring, rotary force measuring, bearing examination, cardan axle examination, DC engine characteristics examination etc. device

Services:
- Mechanics measurements and their evaluation (force, tension, displacement, vibration, etc.)
- Design of general engineering structures
- Design and implementation of complex mechatronics devices
- Development of measuring apparatuses, measuring stations, connected to image processing
- Development of measuring apparatuses, measuring stations, connected to image processing
- Modelling and simulation of physical processes
- Design and implementation of educational purpose laboratory equipment (mechanical engineering, mechatronics)

References:

Contract research:

Research of industrial utilization possibilities of electroactive polymers (ENTALSZE)

Type: Industrial commission

Aim: To research the industrial utilization possibilities of electroactive polymers

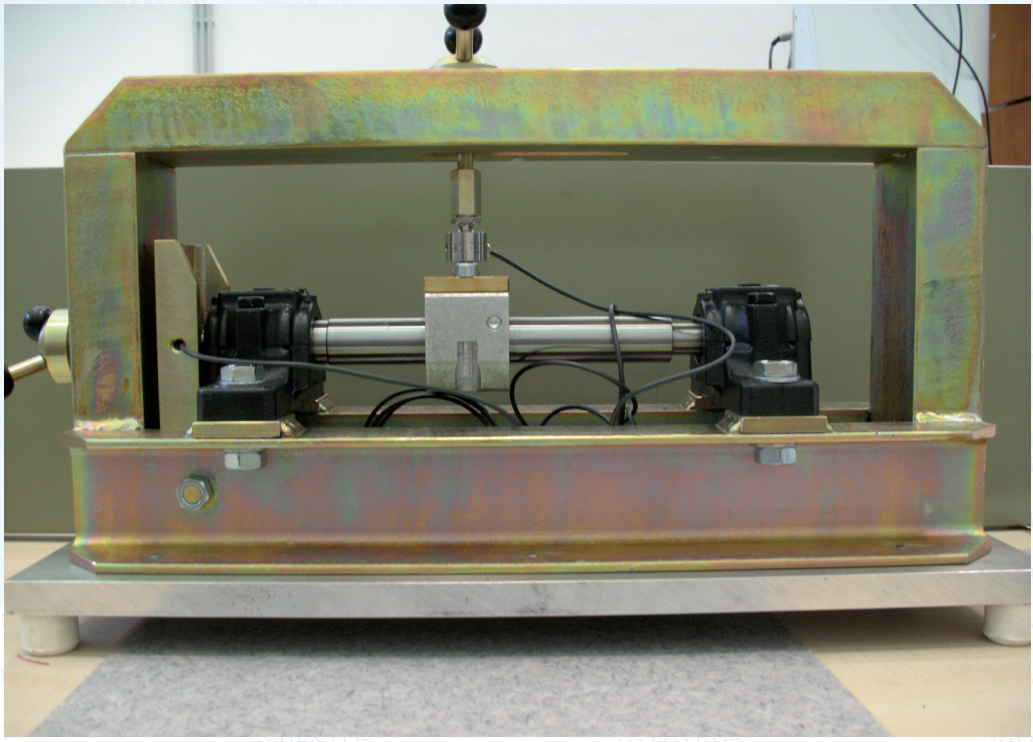
Tasks, performed by the Department: Performing literary research, exchanging experience, simulating and measuring the tasks

Duration: 2009-2011

Client: ENTAL Ltd.

Keywords:

electroactive polymers, (optical) development of sensors, service life examination of roller bearings, mechanical engineering measurements, examination of bolted joint, butt on occurrences in rotors, active reduction of cutting forces, modelling of connected heat- and fluid mechanics problems



SZÉCHENYI ISTVÁN EGYETEM • SZECHENYI ISTVAN UNIVERSITY

FACULTY OF ENGINEERING SCIENCES
Department of Information Sciences

Head of department: Dr. Pozna Claudiu Radu
Position: University associate professor

Contact information: Dr. József Sziray
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Research profile:

– Development of real-time software systems
– Functional verification of safety-critical computer systems
– Medical-genetics diagnostics
– Implementation of marketable communication and information services based on ENUM procedure

Applied Methods / Special tools:

– SAS statistical data-search and decision support software system
– Business Objects management decision support system
– Oracle database management system
– National Rose designer framework
– WinDev object-oriented designer framework
– Business Objects
– SAS
– Oracle
– WinDev
– National Rose

References:

Research projects:

1. Research of safety-critical diagnostics informatics systems

   Type: OTKA F046726

   Aim: To develop adequate algorithms and procedures that ensure the safety, reliability, faultlessness of the service of safety-critical diagnostics informatics systems and to apply them effectively in both technical and biomedical systems, as well as in their development

   Tasks, performed by the Department: Developing new remote-diagnostics algorithms, and publishing results; developing and publishing new software development methods; developing and publishing new photo emission and diagnostics algorithms; developing and publishing new biomedical diagnostics algorithms; comparing, validating and publishing algorithms; implementing, validating, and publishing algorithms

   Duration: 2003-2007

   Project partners: Budapest University of Technology and Economics

2. Implementation of services, based the ENUM procedure

   Type: GVOP-3.1.1.-2004-05-0408/3.

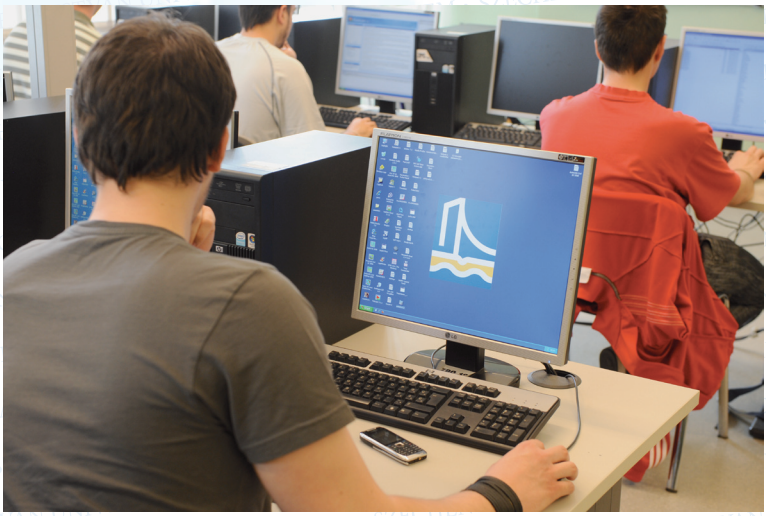
   Aim: To create a database necessary for the Internet service of certain users (that has a simple DNS query), utilizing the help of the ENUM procedure, telecommunication identifiers and other identifiers. To create the possibility of the implementing a marketable communication and information service, based on the ENUM procedure

Tasks, performed by the Department: Following the requirement specification of services, based on ENUM; preparing an impact assessment for the use of the Pilot system; following requirement specifications, analysing, designing, functional testing, system testing, database uploading, configuring Secure DNS of the pilot system; preparing specifications, designing, developing the environment, preparing the information materials, uploading the knowledge base, preparing teaching materials of ENUM knowledge-centre; following requirement specifications, analysing, designing, developing software, functional testing, system testing, public testing of ENUM competent clients; following requirement specifications, analysing, designing, developing software, functional testing, system testing, public testing for clients, used in mobile equipment
Duration: 2005-2006
Project partners: Budapest University of Technology and Economics, Interware Inc.

Contract research:

1. Development of real-time software systems (application of Real Time Java language) Thomas Watson Research Center, Yorktown Heights, New York State IBM Innovation Award
   Type: Industrial commission
   Aim: To develop real-time embedded systems
   Tasks, performed by the Department: Developing real-time Java; following Real Time Specification for Java (RTSJ); performing parallel programming, scheduling and synchronization
   Duration: 2008-2011
   Client: IBM Hungary Ltd., Budapest
2. Functional verification of safety-critical computer systems
   Type: Industrial commission
   Aim: To test, verify and validate the safety-critical software systems, to computationally plan the malfunction tests of hardware systems
   Tasks, performed by the Department: Software testing, testing design of CMOS circuits, performing failure simulations, handling NP-complete computational complexity, utilizing algorithm theory, utilizing computation theory
   Duration: 1998-
   Partners: Budapest University of Technology and Economics - Department of Measurement and Information Systems, Prolan Ltd. Budakalász, Thales Austria AG Wien, Thales Ltd. Budapest

KEYWORDS:
Real-time software systems, safety-critical computer systems, medical-genetics diagnostics, ENUM process



FACULTY OF ENGINEERING SCIENCES
Department of Automotive and Railway Engineering

Head of department: Dr. Vince Nagy
Position: University associate professor

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Research profile:
- Dynamics and driving dynamics of Automotive and Railway Engineering
- In-depth analysis of road accidents
- Company development sample system model
- Development of rolling stock maintenance strategy
- Development of rolling stock and subassemblies among laboratory and field conditions
- Application of renewable energies in vehicles

Applied Methods / Special tools:
- Examination of passenger vehicles on rolling test stand and measurement of fuel consumption
- In-depth analysis of large vehicle accidents
- Theoretical research-development
- Practical realization of theoretical research (system model)
- Development of railway wheel wearing profile, based on profile measurements
- Fuel consumption gauge (Otto-, diesel, ethanol, integrated for the rolling test stand)
- Measurement and evaluation of railway wheel profile

References:
Research project:

Development and introduction of a modular platform, suitable for the analysis of Hungarian large vehicle accidents

Type: State commission
Aim: To develop accident analysis literary research and processing software
Tasks, performed by the Department: Performing literary research and developing algorithms
Duration: 2009-2011
Project partners: e-Grade Ltd., Prof-e Ltd., Accident Research- and Analytical Non-profit Ltd., Hungarian Road Transport Association (MKFE)

Contract research:

1. Development of the sample system model
Type: Industrial commission
Aim: To develop the strategic purpose vehicle plant sample system model
Tasks, performed by the Department: Creating a research report
Duration: 2006-2010
2. Adding the developed sample system model in plans
Type: Industrial commission
Aim: To add the developed sample system model with the vehicle plant specifications in plans
Tasks, performed by the Department: Creating a research report
Duration: 2008-2010

3. Development of wearing wheel profile in road and railway service

Type: Industrial commission

Aim: To reduce the wearing of wheels and rails and to increase safety against derailment

Tasks, performed by the Department: Creating a research report

Duration: 2003-

KEYWORDS:

in-depth analysis of passenger vehicles, road accidents, rolling stock maintenance strategy, vehicle development



FACULTY OF ENGINEERING SCIENCES
Department of Mathematics and Computational Sciences

Head of department: Dr. Zoltán Horváth
Position: College professor

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Research profile:

- Mathematical modelling; setting up industrial, mathematical models
- Development and application of the numeric methods for solving engineering problems
- Numerical solutions and qualitative analysis of differential equations
- Finite element methods (FEM)
- Development of finite volume methods, flow calculation methods (CFD)
- Industrial application of FEM and CFD methods
- Meshfree methods
- Margin-integral equation methods
- Interpolation techniques
- Equations, computational numerical modelling of continuum-mechanics
- Parallel numeric algorithms
- Mathematical bases of operations research
- Non-linear and global optimization
- Automated optimization for complex simulations
- Mathematical methods of decision preparation
- Data mining, collaborative filtering
- Logical game programming
- Optimization of production scheduling
- Computer algebra, fractal geometry

Applied Methods / Special tools:

- Theoretical and applied methods of mathematics and computational sciences, with special regard to performing computational simulations and utilization of their results
- Special software: Hypermesh, Abaqus, MD Nastran, Fluent, Matlab, Maple, GAMS
- Special hardware: GPU and FPGA workstations; HP BL260C blade server (12 compute node, each having 2 pieces of 3GHz Quad-Core Intel Xeon, 16GB RAM, infiniband interconnect)
- Use of FEM programme packages: HyperMesh, Abaqus, MD Nastran
- Use of CFD programme packages: ANSYS Fluent
- Use of general purpose mathematical software: MS Excel, Matlab, Maple
- Preparing own code on C, C++ programming languages
- Programming of multiprocessor, staging memory computer with MPI system
- Programming of hardware accelerators: GPU (with C for CUDA) and FPGA (with Impulse C)
- GAMS modelling and optimizing software
- Computational programme packages, serving the solution of mathematical optimization models: GAMS, MS Excel, WinQSB
- Use of statistical programme packages: SPSS, Clementine
- Information technology in the education
- Electronic teaching material preparation and recitation

Services:

– Solution of practical problems with the help of optimizing software
– Model calculations, studies, analyses, preparing recommendations
– Industrial mathematical calculations: finite element and flow calculations
– Data mining, recommendatory systems, risk analysis
– Performing high-performance calculations (HPC), code production, and/or hiring materials

References:

Research projects:

1. Simulation and optimization

   Type: TÁMOP 4.2.2

   Aim: To perform basic research for the development of simulations, based on quick, modern hardware for complex physical and production systems

   Tasks, performed by the Department: Developing of parallel programming methodologies and preparing simulations - based on the methodologies - with its own codes, mathematical modelling of physical processes, and numeric analysis of mathematical models

   Duration: 2009-2011

   Project partners: Lehigh University (Betlehem, PA), Eötvös Lóránd University of Sciences, HTEC (company, USA), University of Graz, Johannes-Kepler-University Linz, King Abdullah University of Science and Technology (KAUST)

2. Development of digital holographic interferometry with increased optic angle and resolution and its application in shape- and deformation measurement

   Type: GVOP-3.1.1.,-2004-05-0403/3.0

   Aim: To develop numeric algorithms and software for digital holography

   Duration: 2005-2007

   Project partners: Budapest University of Technology and Economics - Department of Physics

3. EAP research

   Type: INNOREG (ND_INRG5_07ENTALSZE)

   Aim: To state equations of state of EAP materials, to establish a mathematical model, to define the behaviour occurring as a result of an electrical field. To develop algorithms - suitable for the calculation of deformations - for simulations

   Duration: 2008-2010

   Project partners: ENTAL Ltd.

Contract research:

1. Vehicle Industrial Regional University Knowledge-centre

   Type: Industrial commission

   Aim: To perform research connected to the vehicle industry

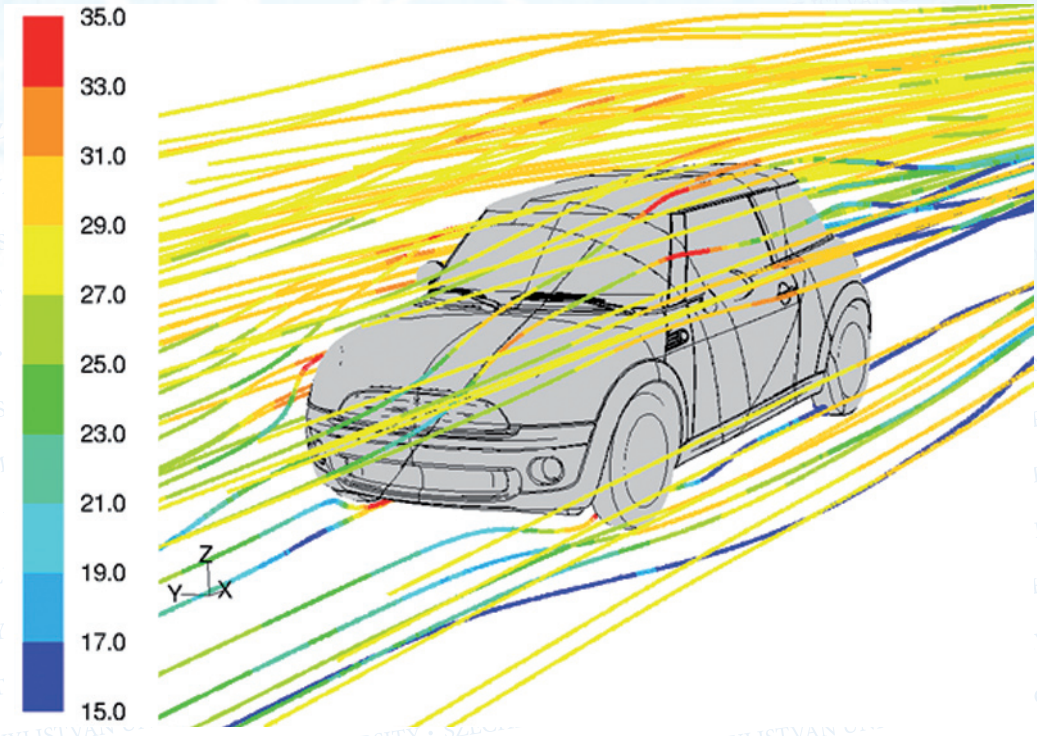
   Tasks, performed by the Department: Performing computational simulation of the flow around the motor vehicle, then calculating the noise of the external mirror; optimizing the suction- and exhaust system of the diesel-engine; studying the heating of the valve seat; determining the tolerance accuracy of the external mirror, based on the CAD-model

   Duration: 2006-

   Principals: SAPU limited partnership, Deutz AG., Audi Hungaria Motor Ltd.

2. Integrated Automotive Product and Technology Development Research
   Type: Industrial commission
   Aim: To perform research connected to vehicle industry
   Tasks, performed by the Department: Calculating the heating of wet brakes, performing deflection-examinations on extreme load front running-gears
   Duration: 2008
   Client: Rába Vehicle Industrial Holding Inc.
3. OTP-project
   Type: Bank commission
   Aim: To perform a risk analysis
   Tasks, performed by the Department: Developing the credit rating process for large data sets, including developing its own code
   Duration: 2009
   Client: OTP Bank, Budapest
4. Audi-project
   Type: Industrial commission
   Aim: To prepare software, to make a production plan based on orderings
   Tasks, performed by the Department: Modelling, preparing software
   Duration: March 2008 - October 2008
   Client: Audi Hungaria Motor Ltd.

KEYWORDS:
mathematical modelling, numeric methods, differential equations, finite element methods, finite volume methods, flow calculations, methods, without web, automated optimization



FACULTY OF ENGINEERING SCIENCES
Department of Technical Teacher Training

Head of department: Dr. Zoltán Létray
Position: University associate professor

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Research profile:



- E-learning development
- Project management
- Webusage, mining
- Project support with LMS system
- Operating LMS system
- Use of LMS system in the teacher training
- Project management/professional management
- Trainer the trainer
- Methodology training, management training, holding trainings
- Methodological development

Applied Methods / Special tools:

- Use of course editor software
- Use of E-learning framework
- Direction of E-learning teaching material development
- Application of E-learning development methods
- On-line questionnaire-editing, processing
- SPSS and Excel data-processing
- Use of IBM SPSS Modeller software
- Use of IBM SPSS Statistics software
- Preparing interactive learning objects
- Use of CABRI software, preparing animations / CABRI II plus
- Configuration, operation, supervision of Moodle system
- Adobe Acrobat Pro 9 Extended
- Mathtype 6.5c

References:

Research projects:

1. Development of further education teaching material for lecturers
   Type: HEFOP 2008/3.5.1
   Aim: To develop further education teaching material for lecturers
   Tasks, performed by the Department: Selecting, assorting, and compiling the teaching material
   Duration: 2007-2008
   Project partner: National Institute of Vocational and Adult Education (NSZFI)
2. Development of a partner-centred self-assessment model, based on human resources development
   Type: HEFOP 2004/3.3.1
   Aim: To develop the EFQM self-assessment model for higher education, further education of lecturers and managers

Tasks, performed by the Department: Preparing a model, designing the on-line EFQM questionnaire, processing the on-line EFQM questionnaire, selecting, arranging, and compiling the teaching material

Duration: 2004-2007

Project partner: College of Dunaújváros

3. Establishment of the University Knowledge-management Centre, as well as organizational developments, helping regional-level knowledge utilization and knowledge transfer at Széchenyi István University

Type: TÁMOP 4.2.1/08/01

Aim: To efficiently help and support the university employees and students – to perform innovation and research-development activities - with information and technology transfer services

Tasks, performed by the Department: Providing information technology support (Moodle), planning distance education, creating a database survey

Duration: 2009-2011

4. Train the trainer

Type: TAMOP-4.1.2-08/1/C

Aim: To develop the e-teaching material on non-formal studies for management and conflict management methods for the target group

Tasks, performed by the Department: Developing the teaching material and methodological competences, creating practical applications for the tutorial, creating mentor tasks, holding methodological and conflict management trainings

Duration: 2009-2011

5. Teaching material development

Type: TAMOP – 4.1.2-08/1/A, B

Aim: To develop teaching material and a methodology for further education

Tasks, performed by the Department: Developing the teaching materials, holding trainings, providing methodological assistance, organizing project management

Duration: 2009-2010

Project partners: Kecskemét; University of West-Hungary Savaria University Center (NYME-SEK)

Contract research:

BME APPI EPT project

Aim: To analyse the use of the Coedu e-learning framework.

Tasks, performed by the Department: Analysis of web logs, modelling, statistical processing

Duration: 2006-2010

Principals: Budapest University of Technology and Economics - Institute of Applied Pedagogy and Psychology (BME APPI EPT); SPSS Hungary

KEYWORDS:

e-learning development, project management, project support with LMS system, project management/professional management, train the trainer, methodological training, management training, trainings, methodological development

FACULTY OF ENGINEERING SCIENCES
Department of Telecommunications

Head of department: Dr. Gábor Borbély
Position: University associate professor

Contact information:
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Research profile:

- Standardisation, preparingcompany standards
- Info-communication and control theory
- Intelligent buildings
- Professional further education of special groups
- Analysis of topological structures, fractal analysis, wavelet analysis
- Modelling and simulation of info-communication systems
- Numeric analysis and programming
- Measuring equipments and methods, procedures
- Acoustic measurements and tests
- Digital, multi range sound recording
- Optical telecommunication, planning, measurement, classification of networks
- Numeric simulation of electric and magnetic fields, material testing by EM fields
- Designing, modelling of antennas, and antenna systems
- Physics of condensed materials, density-functional theory
- Electron structure calculation
- Electrotechnical basic researches and applied research
- Designing, measurement, classification of IP television systems
- Designing, measurement, classification of satellite communications systems
- Designing, classification of cable television systems
- Radio frequency systems
- Electromagnetic compatibility
- Mobile telecommunication systems
- Reliability-analysis
- Reliability-analysis of safety-critical systems
- Digital broadcasting
- Designing, classification of digital broadcasting systems
- Remote diagnostics, designing of patient surveillance systems, applications
- Intelligent city service design
- Measuring the transmission properties of ADSL systems with ARGUS 145+ tester
- Classification of structured networks, based on transmission parameters
- Classification of optical networks, power dividers and WDM filters, based on transmission parameters
- Classification of analogue voice-type terminal equipments

Applied Methods / Special tools:

- Circuit-simulation (analogue and digital)
- Radio frequency measurements
- OMNeT++ (event-driven discrete-event modelling and simulation library and framework)
- GUIB (Graphical User Interface for Blind Persons — User interface for blinds)
- Classification of broadcasting systems (analogue and digital), examination of reception technical parameters

– Classification of programme distribution and CTV systems (analogue and digital), (optical and coaxial)
– Emission measurements at radio frequency testing laboratory until 40 GHz, with advanced instrumentation, fully anechoic chamber (10×5×4 m), testing in climatic chamber –40 °C – +180 °C (60×70×80 cm)
– Recording studio with digital instruments, mixer, multi-level digital mixing and recording possibility
– Audio noise analyser (B&K 2260)
– Analogue and digital cable television hub station
– Hybrid (optical-coaxial) cable television network
– Structured network analyser
– Optical measuring system
– Optical spectrum analyser, broadband optical transmitter
– ARGUS 145+ ADSL tester
– Kathrein MSK-33 + MVG10 sweep generator
– Kathrein MSK-200
– R&S®EFA40/43 Body: Receiver (DVB-T)
– Acterna SDA 5000
– CW-4812 ASI & QAM TS Analyzer
– CW-4262 QAM modulator (single, with IP input)
– CW-4971 QPSK demodulator for Quad DVB-S and DVB-S2 reception (gigabytes IP, FTA)
– CW-4973 QAM demodulator Quad (gigabytes IP, FTA and CI)
– CW-4976 OFDM demodulator Quad (gigabytes IP, FTA and CI)
– CW-4951 IP Remultiplexer & Streamer Quad with four independent IP output
– TIMS-301C PC controlled instruction system +
– EVAL-16 KIT
– COMSOL Multiphysics
– High-performance computer

Services:

– Reliability-analysis
– Examination of telecommunication networks
– Musical and acoustic examinations
– Material structure tests with laser beam
– Digital processing, packing of voice- and video signals
– Radio frequency measurements from9 kHz to 40GHz
– EMC advising and tests

References:

Research projects:

1. Research tender

   Type: OTKA (Hungarian Scientific Research Fund) T043258
   Aim: To develop soft computing computational realization with numeric algorithms
   Tasks, performed by the Department: Participant
   Duration: 2003-2006

2. Analysis and identification of Fuzzy systems and models

   Type: OTKA (Hungarian Scientific Research Fund) T048832
   Aim: To completely identify the hierarchic interpolative fuzzy systems with the combination of bacterial and LM technologies, in addition to clustering that has been applied already

Tasks, performed by the Department: Consultant
Duration: 2005-2008

3. Computational intelligence algorithms, systems and models
Type: OTKA (Hungarian Scientific Research Fund) K75711
Aim: To perform an e-research project aimed at fuzzy rule-base models and to investigate the learning algorithms occurring with help of different intelligent methods
Tasks, performed by the Department: Consultant
Duration: 2009-2012

Contract research:

1. Data transfer through DVB-T system
Type: Industrial commission
Aim: To configure and to programme an update of DVB-T set-top-boxes
Tasks, performed by the Department: Revealing technical options, drafting-up a system-plan, creating an operating service
Duration: 2008-2010

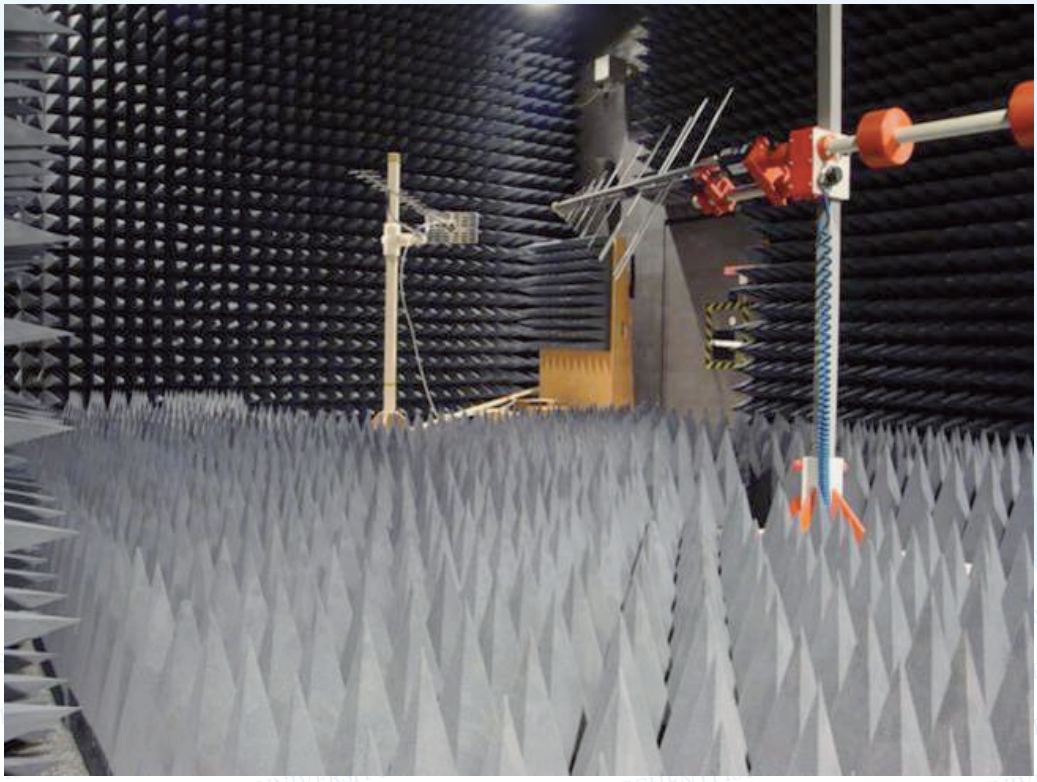
2. Classification of satellite-based programme-service (DVB-S2)
Type: Industrial commission
Aim: To examine the reception technology parameters and the quality properties of the programme-service
Tasks, performed by the Department: Taking visual and instrumental measurements; MPEG2-TS bitrate measurement
Duration: 2008-2009

3. Examination and modelling of cable programme- and signal forwarding systems
Type: Industrial commission
Aim: To model, design and measure the channel distribution of analogue and digital programmes
Tasks, performed by the Department: Instrumental measuring and modelling
Duration: 2007-2009



4. Computational intelligence systems (Designing self-learning algorithms for adaptive computational intelligence systems)
Type: TÉT SK-15/2006
Aim: To perform automatic pre-processing of data that is necessary for self-learning algorithms, to determine the attributes, to design the new hybrid adaptive algorithms for creating automatic knowledge-bases, to design and implement the neural networks with fuzzy sequential elements
Tasks, performed by the Department: Research project leader
Duration: 2007-2008
Project partner: Kosice Technical University

KEYWORDS:
infocommunication systems, acoustic examinations, digital multi range sound recording, antennas and antenna systems, electron structure calculation, satellite communications, telecommunication networks, digital broadcasting, optical networks, radio frequency examinations, electromagnetic compatibility
vizsgálatok, elektromágneses kompatibilitás



KAUTZ GYULA FACULTY OF ECONOMICS

Department of Economic Analyses

Head of department: Dr. Éva Szalka
Position: University associate professor

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Research profile:

- Analysis of macroeconomic processes
- Financial planning, analysis
- Market analysis
- Behavioural finance
- Investment risk assumption
- Local authority finances, communal economics
- Company valuation, project evaluation
- Assessment of financial services
- Limits of accepting the international accountancy standards in the European Union
- European accountancy specifications, applicable to small and medium-sized enterprises. (IFRS-SME, Small-Business Act, etc.)
- Quality differences of the application of international accountancy specifications in different European countries
- Methodology of spatial analysis
- Spatial statistics

Applied Methods / Special tools:

- Computational data analysis

Services:

- Technical analysis of the stock market

References:

Research projects:

1. Potential local resources of the local governments
   Type: Post-doctoral research
   Aim: To reveal the role of the local sources financing the local governments; to describe and model the major theoretical connections; to critically analyse the actual Hungarian practice and delineating solution alternatives concerning the source involvement strategy of the local governments across the country
   Duration: 2008-2009
2. Methods of spatial analysis and its applications
   Type: Post-doctoral research
   Aim: Analysis of the various types and concepts of distance and space and the special methods of analysis of distances and spaces. Spatial investigations require either special research methods or spatial adaptation of aspatial techniques.

Duration: 2009-2012

3. Distance and space in economics
   Type:OTKA (Hungarian Scientific Research Fund)
   Aim: Systematic analysis of the various types of distance and space used in economic model building and the effect of the space view on the applicability of theories.
   Duration: 2010-2012

Contract research:

1. The effect of budgetary and monetary policy on the insurance market
   Type: Insurance company commission
   Aim: To create an impact assessment
   Tasks, performed by the Department: Creating a theoretical summary, analysing data, modelling
   Duration: 2008
   Client: AVIVA Insurer Inc.
2. The consumer behaviour and life insurance
   Type: Insurance company commission
   Aim: To create an impact assessment
   Tasks, performed by the Department: Creating a theoretical summary and questionnaire survey, modelling
   Duration: 2008
   Client: AVIVA Insurer Inc.
3. Measurement and analysis of the insurance market
   Type: Official commission
   Aim: To create an impact assessment
   Tasks, performed by the Department: Creating a theoretical analysis, analysing data, modelling
   Duration: 2010
   Client: Hungarian Competition Authority (GVH)
4. Financial planning and analysis, scenario analysis of the practicality of a new project from the financial perspective
   Type: ILSA commission
   Aim: To promote goodwill and to examine the sector
   Duration: 2009
   Client: ILSA - International Lean Sigma Association

Keywords:

macroeconomic processes, financial planning, market analysis, computational data analysis, financial planning and analysis, goodwill, behaviour finances, local government finances, company valuation, international accountancy specifications, investment risk assumption, stock market, spatial analysis



KAUTZ GYULA FACULTY OF ECONOMICS
Department of Marketing and Management

Head of department: Dr. László Józsa
Position: University professor

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Research profile:

Marketing
- Non-profit marketing and management
- Marketing Information, Decision Support and Control Systems
- Marketing Strategy
- Media Idea and Economy
- Online Marketing
- Direct Marketing Methods
- Designing Integrated Marketing Communication and its Tools Used in the Process
- Corporate Information System
- Non-profit and SME's Marketing
- Marketing Research
- Environment and Market Analysis
- Marketing of Public Relations
- Service Marketing
- Consumption Theory and Consumer Behaviour
- International Marketing
- International and Intercultural Marketing
- Product and Price Policies
- B2B Marketing
- Marketing Management

Management
- Project Management
- Knowledge Management
- Management of Public Organizations
- Introduction to Public Service Communication
- Organizational Behaviour
- Strategic Management
- Advanced Strategic Management
- Business Economics
- Production Management
- Business Planning
- Economy of Trade
- Production Management
- Production and Service Management
- Management of Value Added Production and Logistics
- Human Resources Management
- Service Management

Communication
- PR
- Integrated Marketing Communication
- Marketing Communication

Applied Methods / Special tools:

- Database building, handling and analysing (Excel, SPSS)
- Market research methods
- Education and research methodology
- Brainstorming
- Workshop leading, organising and planning
- Input-output analysis
- Designing and analysing of questionnaires
- Internet Research
- Organising and analysing focus groups
- Interviewing
- Computer simulations
- Study trips
- Conferences organised in Hungary and abroad (Europe, Asia, Australia, New-Zeeland, South America, USA)

Services:

- Qualitative and quantitative research
- Market research
- Workshop leading, organising and planning
- Database building, handling and analysing (Excel, SPSS)
- Input-output analysis
- Designing and analysing of questionnaires
- Internet Research
- Organising and analysing focus groups
- Interviewing
- Computer simulations

References:

Research projects:

1. CURE

   Research by Kautz Gyula Faculty of Economics
   Type: EU FP6
   Project topic: Corporate Culture and its Regional Embeddedness
   Tasks, performed by the Department: carrying out, documenting and analysing interviews of corporate leaders. Participating in international workshops.
   Participants of the project: Konczosné Dr. Szombathelyi Márta

2. TAMOP-4.2.1-08/1-2008-0005

   Principal: SZE Knowledge-Management Centre
   Project: Survey the Demand of Corporations for Services of Széchenyi University (project modul)
   Tasks, performed by the Department: interviews with corporate leaders, research and analysis of questionnaires
   Participants of the project: Dr. Ercsey Ida, Lőre Vendel, Németh Szilárd, Sólyom Andrea

Contract research:

Satisfaction research through phone
Program leader: Dr. habil. CSc. Józsa László
Principal: Metro Trade Ltd, Hungary
Project: Analysing complaint handling routine of food producers and distributors
Participants of the project: Dr. Ercsey, Ida, Dr. Keller, Veronika

Keywords:
marketing, management, non- profit marketing and management, communication, public relations, marketing and management methods, marketing strategy, B2B marketing, analysis, research, service marketing and management



KAUTZ GYULA FACULTY OF ECONOMICS
Department of International Communication

Head of department: Dr. Lívia Ablonczy-Mihályka
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Research profile:

Main research area: applied linguistics
– Intercultural communication, Communication and culture
– Professional and organizational communication
– Economic terminology

Applied Methods / Special tools:

Quantitative and qualitative research methods:
– Empiric tests (questionnaire surveys)
– Empiric tests (in-depth interviews)
– Specialist literature search

Services:

– Studies, analyses, preparing recommendations

References:

Research projects:

1. OPTICOM (Optimisation of Inter-Cultural Communication & Collaboration) 2009-2011

Type: Creating the Future. Austria-Hungary Cross-border Cooperation Programme
Aim: To improve the economic cooperation of the Austro-Hungarian frontier regions
Background: In the project region 20.000-30.000 enterprises and several public institutions take part in the cooperation processes. The parties encounter several challenges in the course of economic cooperation; these challenges include the solving of problems caused by cultural differences. It is believed that the application of innovative cooperation and communication technologies, as well the awareness of cross-cultural differences help to optimise cross-border business relations which will result in the increase in the region's competitiveness.
Tasks performed by the Department:
– Conducting background-research on the target areas. Preparing a guide with the historical, economic, cultural and political characteristics of the project areas.
– Reviewing existing research on the cultural characteristics of the target areas, compiling quantitative and qualitative data on the cultural and communication characteristics of the target areas (questionnaire survey, interviews)
– Performing a scholarly analysis, processing of the results
Duration: 2009-2011
Project partners: Internationalisierungscenter Steiermark (AUSTRIA); Chamber of Commerce and Industry for Győr-Moson-Sopron County; Enterprise Development Foundation of Vas County; Wirtschafstförderungsinstitut (WIFI) der Wirtschaftskammer Österreich, Vienna

2. Dialogue of professional, organizational and national cultures 2006-2009

Type: Széchenyi István University Internal Principal Research Line

Aim: To reveal the relationship between intercultural and organizational communication

Tasks performed by the Department:

– Conducting background-research on the topic of the connection of intercultural dialogue, culture and economics
– Conducting surveys and structured in-depth interviews at companies, aiming to examine the role and interplay of the use of languages, intercultural competence and professional skills
– Integrating the research results into the teaching curricula and syllabi of subjects, connected to professional, organizational and national cultures and communication (intercultural communication, manager communication, business negotiations, etc.)
– Participating in joint research projects with a similar profile with national post-secondary educational institutions, institutes and organizations (e.g. Economic and Corporate Communication Inter-institutional Intellectual Workshop)

Results:

– *Education:* renewed subject programmes in the BA and BSc trainings and teaching material for the subject intercultural manager communication at Master level.
– National and foreign studies, articles: 2007: 13; 2008:15; 2009: 20
– National conference-presentations: 2007: 4, 2008: 6, 2009: 12
– Foreign conference-presentations: 2007: 2, 2008: 4, 2009: 5
– Value-added connections with several foreign universities (e.g. joint volume of academic papers with Johannes Kepler University, Linz)
– Expanded research relations
– In the third year of the research - through the dissemination of the results – the Department was invited to participate in an international research project (OPTICOM - Optimisation of Inter-Cultural Communication & Collaboration).

Duration: 2006-2009

Keywords:

intercultural, cross-cultural, professional and organizational communication, economic terminology, lexicological and lexicographical research



KAUTZ GYULA FACULTY OF ECONOMICS
Department of International and Theoretical Economics

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Position: Jean Monnet professor

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Research profile:
- Transnational companies
- Economic and social development in Asia
- National and ethnic minorities in Europe
- Hungarian foreign policy
- Jewishness in Hungary
- Civilization studies
- Theoretical issues of macroeconomics
- The condition of the Hungarian human-capital stock
- Ecological economics
- Hungarian economic history of the 20th century
- Hermeneutics
- Price theory
- Competition policy
- Measurement of market power
- Monetary macroeconomics, monetary policy
- Endogenous money theories
- Modelling of business decisions and processes
- Complex corporate financial planning and analysis and controlling
- Ecological footprint
- Sustainability reports
- Corporate citizenship
- Hungary and the EU
- Hungarian economy and economic policy
- The global financial and economic crisis
- Europe 2020 strategy
- Economic and Monetary Union

Applied Methods / Special tools:
- Development of specific literature
- Internet research
- Short study trips
- Archives
- Multivariable statistics
- Macroeconomic modelling
- Computational simulation
- Econometrical examinations
- Business and corporate financial planning models
- Microsoft Excel, Eviews, Winsolve, Maple, Cognos

References:

Research project:

CURE (Corporate Culture and Regional Embeddedness)

Type: EU FP6

Aim: To promote the corporate and regional understanding of cultural values and practices

Duration: 2007-2009

Project partners: Institute for Work and Technology (DE); Cardiff University, Centre of Advanced Studies (UK); Institute for Advanced Studies in the Humanities, (DE); Radboud University of Nijmwegen, (NL); University of Appl. Science Nothwestern Switzerland, (CH); Vienna University of Economics and Business Administration (AT)

Keywords:

transnational companies, macroeconomics, modelling of business decisions and processes, complex corporate financial planning and analysis, controlling, ecological footprint, sustainability reports, Hungary and the EU, Hungarian economy and economic policy, global financial and economic crisis



KAUTZ GYULA FACULTY OF ECONOMICS
Department of Regional Studies and Public Policy

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Research profile:

- Regional- and urban development
- Local- and regional economic development
- Regional policy
- Frontier affairs
- National and regional innovation systems, development
- Spatial concentration of economic processes, clustering
- Culture and local development
- Connection of labour market and higher education
- University-company cooperation
- Regional programmes and evaluation of tender projects
- Knowledge and regional development, regional processes of knowledge economy
- Examination of settlement factors
- The properties of Hungarian achievement of middle-class status, civil values and forms of behaviour
- Life courses of entrepreneurs, entrepreneur successes, entrepreneurial behaviour from the beginning of the 19th century, until now and the origin and handing down of entrepreneurial knowledge
- Forms of political value behaviour, political socialization
- Development of the prejudice, its appearing forms and its role in societies
- Social organizations, social cohesion
- Environment-consciousness in Hungarian society and the forms of behaviour related to it
- The development of social capital and its effect on ventures and school success
- Career and life strategies of the youth of today
- Social capital, private life values and forms and behaviour of the apprentices of today

Applied Methods / Special tools:

- Education- and research methodology
- Database creation, handling, analysis, data mining
- Special computational applications: Geoinformatics, Gretl, Mapinfo, SPSS, TextPipe, Mappoint, Network softwares,
- Moderation of workshops, brainstorming
- Planning, arrangement of workshop activities
- Innovation analysis
- Input-output analysis
- Technological foresight
- Index calculation (regional HDI, Gini-index, Hoover-index)
- Several decennial Archives research practice
- Questionnaire editing and analysis practice
- Content analysis practice
- Planning, arrangement of focus-group conversations

References:

Research projects:

1. CURE (Corporate Culture and Regional Embeddedness)
   Type: EU FP6
   Aim: To promote the corporate and regional understanding of cultural values and practices
   Tasks, performed by the Department: Examining the local effects of Széchenyi István University, corporate citizenship, the connection between universities and companies, and the innovation processes of Győr and its region
   Duration: 2007-2009
   Project partners: Institute for Work and Technology (DE); Cardiff University, Centre of Advanced Studies (UK); Institute for Advanced Studies in the Humanities, (DE); Radboud University of Nijmwegen, (NL); University of Appl. Science Nothwestern Switzerland, (CH); Vienna University of Economics and Business Administration (AT)
2. The connection of the World Wide Web and the politics
   Type: The institutional research commission of the 21st century
   Aim: To analyse the Internet user properties of Hungarian society and the effects it has had on the political world
   Department contact: It was a condition of the invitation to tender to involve the students and to work together with them
   Duration: 2000-2002
3. Careers and life-strategies in the West-Hungarian region
   Type: Sociological researches having national importance
   Aim: To analyse the properties and origin of the career and life-strategy of the college and university students living in the West-Hungarian region
   Department contact: The major part of the research was performed at Széchenyi István University in which the students of the Special College were involved
   Duration: 2002-2003
4. Development of human resources in the civil sector
   Type: Foundation for the Hungarian higher education and research – Research scholarship
   Aim: To perform empiric research in the civil sector of North-West-Transdanubia, to analyse the similarity of the non-governmental organisations, the internal structure of the connection-network and to compare the regional differences between the operational properties of the organizations
   Duration: 2004-2006
5. The private life, communal, and political values of the youth, living in the West-Transdanubian region, studying in vocational institutes
   Type: Sociological researches, having national importance
   Aim: To gain a deeper knowledge of the social capital, overcoming strategies and the relation to the society of the apprentices of today
   Duration: 2008-2009
6. The scholarship of the Hannah Arendt Institute to the Berlin Wann-See Institute
   Aim: To gain knowledge of the German remembrance of culture, attaining educational practices
   Department contact: Integrating the methods attained in Berlin into the framework of different presentations
   Duration: March 2007 (one week)

7. Scholarship in the Jerusalem Yad Iron Institute

Aim: To gain knowledge of the remembrance culture of Israel

Department contact: Holding two six month courses - based on the knowledge, attained here - at the Kautz Gyula Special College of Széchenyi István University

Duration: November 2008 (two weeks)

Contract research:

1. Contract research

Type: Local authority Commission

Aim: To plan and to measure the communication projects of the large investments, within the framework of the ISPA, KEOP, KIOP, Interreg III.

Duration: Continuous from 2003, as a function of the successfulness of the tenders

2. Contract research

Type: Commission of the PTI Institute of the Hungarian Academy of Science

Aim: To gain knowledge of the human resources practice of small and medium-sized enterprises, and to reveal the financial culture of the micro- and small ventures

Keywords:

regional- and urban development, economic development, regional policy, frontier contacts, innovation systems, clustering, culture and local development, university-company cooperation, regional programmes and evaluation of tender projects, knowledge-based regional development, achievement of middle-class status, entrepreneur success, social capital, future prospects



KAUTZ GYULA FACULTY OF ECONOMICS
Centre of Foreign Languages

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Research profile:
– Development of blended educational software for foreign language education

Applied Methods / Special tools:
– E-learning methods, methodological competencies

Services:
– Language education, professional language education
– Translation, professional translation

References:
Research projects:

1. TAMOP 4.1.2. Trainer's training
   Type: TAMOP – 4.1/C
   Aim: To promote language skill development of the trainers and the students and to achieve a level that they are able to give foreign language presentations
   Tasks, performed by the Department: Analysing the local effect of Széchenyi István University, creating connections between the university and companies, creating connections between Győr and collaborating universities
   Duration: 2010-2011
   Project partners: Széchenyi István University - Department of Technical Teacher Training
2. TAMOP 4.1.1. Service developments, promoting international competitiveness
   Type: TAMOP 411 A /10
   Aim: To promote foreign language training of trainers and colleagues, to provide institutional services, to provide foreign language access, to prepare foreign language presentations
   Tasks, performed by the Department: Analysing the local effect of Széchenyi István University, creating connections between the university and companies, creating connections between Győr and collaborating universities
   Duration: 2010-2011
   Project partners: Filep Bálint project manager

Contract research:

Contract research
Type: Industrial commission – preparing professional language translations
Aim: To integrate into the dynamic development of the industrial life of the region
Tasks, performed by the Department:
Duration: constant
Principals: Graboplast Inc., Rába Vehicle Industrial Holding Inc., BOS Automotive Products Company, Győr Industrial Park



Keywords:
linguistics, foreign language education, e-learning, professional language education

DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES

Department of Constitutional Law and Political Science

Head of department: Dr. István Kukorelli
Position: University professor

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Research profile:

- Parliamentary law, parliamentarianism
- Hungarian constitution and parliamentary history
- Representative and direct democracy
- The effect of European integration on the national constitutional law
- Suitable public administration
- Electoral law, electoral systems
- Constitutional law, legal dogmatics
- Europeanization of the administrative law
- Local authorities in the system of multi-level European governance
- Comparative Constitutional Court jurisdiction
- Local governments in Europe
- Local democracy

Applied Methods / Special tools:

- Teaching material development (constitutional law, parliamentary law, international sources of constitutional law, history of politics, political science)
- Handling of parliamentary and EU databases
- Participation in the European expert network

References:

Research projects:

1. History of Hungarian constitutionalism and parliamentarism 1989-2010
   Type: Post-doctoral research programme
   Tasks, performed by the Department: Participating in conferences, preparing scientific publications, performing basic research: developments of parliamentary functions, development of Hungarian constitutionalism
   Duration: 2008-2011
   Project partner: Hungarian Scientific Research Fund (OTKA)
2. Parliamentary Law Research group
   Aim: To perform basic researches
   Tasks, performed by the Department: Creating publications, participating in conferences on every area of parliamentarianism-research
   Duration: 2009- continuous
   Project partners: Office of the Hungarian National Assembly, Association of Hungarian Constitutional Lawyers

3. Ius Publicum Europaeum
   Aim: To conduct comparative legal research
   Tasks, performed by the Department: Participating in a conference, creating publications
   Duration: 2007-2010
   Project partner: Max-Planck-Institute für ausländisches und öffentliches Rech, Heidelberg
4. Comment on the constitution
   Aim: To prepare a comment on the constitution
   Tasks, performed by the Department: Participating in a conference, creating publications
   Duration: 2003-2010
   Project partners: Századvég Kiadó (Publishing House), Konrad Adenauer Stiftung
5. The Local Government in Europe: The 'Fourth Level' in the EU Multi-Layered System of Governance
   Aim: To perform comparative research
   Tasks, performed by the Department: Participating in a conference, creating publications
   Duration: 2009-2010
   Project partner: University of Hull (GB)
6. Use of Foreign Precedents by Constitutional Judges
   Aim: To perform a comparative analysis of performance of law
   Tasks, performed by the Department: Participating in a conference, creating publications
   Duration: 2008-2010
   Project partner: International Association of Constitutional Lawyers
7. Group of Independent Experts
   Aim: To monitor the European Charta of the local authorities
   Tasks, performed by the Department: Participating in a conference, preparing reports
   Duration: Continuous
   Project partner: Council of Europe
8. Report on local and regional level participation in Europe
   Aim: To prepare a European survey and comparative report
   Tasks, performed by the Department: Leading the research, preparing a comparative report, participating in a conference
   Duration: 2010
   Project partners: University of Utrecht, Province of Utrecht, Council of Europe

KEYWORDS:
parliamentary law, parliamentarism, constitutional law, constitution history, administrative law, representative and direct democracy, electoral law, electoral systems



DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Criminal Law Sciences

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Position: University associate professor

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Research profile:
- Health criminal law
- Bioethics, forensic medicine
- Law of international crimes
- International cooperation in criminal matters

Applied Methods / Special tools:
- Professional activity in the specified fields (judicial expertise, vetting process, professional critique, participation in the preparation of legislative work)
- Writing lecture notes in international criminal law, criminal procedural law, criminal law, criminology

References:
Research projects:

1. Prize-winner OTKA (Hungarian Scientific Research Fund) research tender in the topic of criminal law related to health
   Type: OTKA (Hungarian Scientific Research Fund)
   Aim: To cooperate in the codification work of the IRM with respect to the part of the new Criminal code relating to crimes against the person
   Tasks, performed by the Department: Preparing articles, monograph, studies, other publications
2. OTKA (Hungarian Scientific Research Fund) research tender (F46456) in the topics of bioethics and forensic medicine
   Type: OTKA (Hungarian Scientific Research Fund)
   Aim: To cooperate in the codification work of the IRM with respect to the part of the new Criminal code relating to crimes against the person
   Tasks, performed by the Department: Preparing articles, monograph, studies, other publications
3. OTKA research tender in the topic of international crimes
   Type: OTKA (Hungarian Scientific Research Fund)
   Aim: To cooperate in the preparation of an international criminal law encyclopaedia
   Tasks, performed by the Department: Preparing articles, monograph, studies, other publications
4. OTKA research tender in the topic of international criminal cooperation
   Type: OTKA (Hungarian Scientific Research Fund)
   Aim: To participate in the preparation of the domestic statutes' commentary on the forms of international police and judicial assistance, as well as the constitutional and human rights-orientated examination of the relevant issues.
   Tasks, performed by the Department: Publishing articles, performing studies



Keywords:
health criminal law, bioethics, forensic medicine, law of international crimes, international cooperation in criminal matters

DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Legal Theory

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Research profile:
– Electoral law, electoral system in Hungarian society
– Middle-level sociology of law

Applied Methods / Special tools:
– Legislation, suffrage reform, public law, legal dogmatics
– Education, career choice

References:
Research projects:

1. Electoral law, electoral system in Hungarian society

   Aim: To promote the revelation of the legal and cultural values and the development of socio-political self-knowledge

   Tasks, performed by the Department: Participant-supervisor; analysing the literature

   Project partners: National Election Office; Association of European Election Officials (ACEEEO)

2. Middle-level sociology of law

   Aim: To analyse the special social state of female lawyers

   Tasks, performed by the Department: Observing, analysing statistics, giving in-depth interviews, compiling the legal literature

Keywords:
suffrage-, electoral system, middle-level sociology of law, legislation, suffrage reform, public law legal dogmatics



DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Legal History

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Research profile:
- The freedom of the press and its legislation in the dualistic era
- Historical, dogmatic and comparative analysis of the general clauses
- The historical determination of the legal institutions of certain general parts of the law of obligations
- Historical analysis of the crimes against the state
- Hungarian history of the law relating to prisons
- History of efforts, aimed at the forcing-back of international terrorism

Applied Methods / Special tools:
- Lecture notes writing: The constitutional baseline of media law /1825-1990/
- Lecture notes writing: The sketch of the history of European public law
- Lecture notes writing: The sketch of European and Hungarian society development

References:
Research projects:

1. The freedom of the press and its legislation in the dualistic era in Hungary
   Type: Habilitation publication
   Tasks, performed by the Department: Participating in a conference, participating and publishing with international cooperation
   Duration: 2009-2012
   Project partners: National Radio and Television Commission - Institute of Applied Communication Sciences (ORTT AKTI); MTA-ELTE Legal History Research Group, etc.
2. Historical, dogmatic and comparative analysis of the general clauses
   Type: Post-doctoral research programme
   Tasks, performed by the Department: Publishing of monograph
   Duration: 2008-2012
   Project partners: Pázmány Péter Catholic University - Faculty of Law- and Political Sciences; Eötvös Loránd University - Faculty of Law- and Political Sciences Department of Roman Law, etc.
3. Historical analysis of crimes against the state
   Type: Defending PhD dissertation
   Tasks, performed by the Department: Publishing and participating in conferences
   Duration: 2006-2011
   Project partners: MTA-ELTE Legal History Research Group
4. History of efforts, aimed at the forcing-back of international terrorism
   Type: Post-doctoral research programme
   Tasks, performed by the Department: Preparing for conferences, publishing habilitation thesis
   Duration: 2009-2012
   Project partners: MTA-ELTE Legal History Research Group



Keywords:
freedom of the press and its legislation, history, dogmatics of general clauses, law of obligations, historical analysis of crimes, Hungarian history of the law relating to prisons, history of efforts, aiming the force-back of international terrorism

DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Commercial-, Agrarian and Labour Law

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Research profile:
- Company law
- Antitrust law
- Legal regulation of restrictive business agreements
- Commercial contracts
- Insurance law
- Transport and forwarding law
- Law of logistics
- The theory and practice of labour law liability
- The labour law situation of women
- The law of agricultural environmental protection

Applied Methods / Special tools:
- Historical and legal comparative methods
- The economic analysis of the institutes of business law, considering economic efficiency
- E-learning material development

Services:
- Preparing essays, papers, expertise, model laws, law-analyses on issues within the competence of the Department

References:
Research projects:

1. The representation of the logistic approach in the law of contracts
   Type: Post-doctoral research programme
   Aim: To develop a new approach in contract law
   Tasks, performed by the Department: Participating in conferences, publishing scientific publications, enhancing special literature database
   Duration: 2008
   Project partners: Széchenyi István University - Scientific Council; CEDIT- Universitat Jaume I Castello, Spain: E - Europäische Rechtsakademie, Trier
2. Insurance law
   Type: MÖB researcher scholarship
   Aim: To synthesize insurance law research results
   Tasks, performed by the Department: Preparing a PhD-dissertation, participating in conferences
   Duration: 2009
   Project partners: MÖB; Copenhagen University
3. The legal regulation of restrictive agreements in the law of the European Union
   Type: MÖB researcher scholarship
   Aim: To prepare a PhD-dissertation
   Tasks, performed by the Department: Preparing a PhD-dissertation, publishing publications, participating in conferences

Duration: 2005
Project partners: MÖB; Instituto Universitario Europeo, Firenze:

4. The system of transport law regulation in Hungary
   Type: Researcher scholarship
   Aim: To introduce the Hungarian economic legal environment for potential Spanish investors
   Tasks, performed by the Department: Publishing a book, creating publications, participating in conferences
   Duration: 2004
   Project partners: CEDIT; Universitat Jaume I, Generalitat Valencia

Contract research:

1. HEFOP education material development
   Type: Creation of new education material: Foundations of Hungarian business law
   Aim: To prepare electronically available lecture notes for teaching purposes and is
   Tasks, performed by the Department: Completing the lecture notes
   Duration: 2006.
   Principals: Human Resources Development Operative Programme (HEFOP)
2. Coedu e-learning
   Type: electronic education material development
   Aim: To establish the e-higher education in the field of economic- and transport law
   Tasks, performed by the Department: Education material development, preparing study-aids and curriculums
   Duration: 2005-2006
   Principals: Széchenyi István University - Tertiary Education Center

KEYWORDS:
logistics law, transport and forwarding law, insurance law, company law, labour law liability, agricultural environment protection law, antitrust law, competition law



DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Administrative Sciences

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Position: University associate professor

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Research profile:
- Constitutionalism of public administration
- Research of administrative autonomies
- Research of administrative jurisdiction
- Research of telecommunications and communications systems, public services
- Law of public finances

Applied Methods / Special tools:
- Comparative method

Services:
- Preparing studies, comparative analyses
- Development of recommendations, proposals

References:
Research project:

Autonomy in public administration – autonomous public administration

Type: OTKA (Hungarian Scientific Research Fund) K-78357

Aim: To examine the components of administrative autonomies and autonomous public administrations regulated by the law

Tasks, performed by the Department: Examining autonomy-ideas and systems, autonomy in the public administration, regional and local self-administration, legal defence of the local authority

Duration: 2009-2012

Project partners: Pázmány Péter Catholic University - Faculty of Law and Political Sciences

Contract research:

1. Constitution large comment

Type: commission

Aim: To provide a dogmatic explanation of a valid Hungarian constitution

Tasks, performed by the Department: To analyse the administrative jurisdiction and the protective constitution

Duration: 2006-2009

Principals: Századvég Foundation; Max-Planck Institut Heidelberg

2. Control of the public authority licensing system of public road transport services

Type: commission

Aim: To increase the efficiency of the licensing system, to reveal the mechanism of action of certain licenses and possible overlaps, to develop the effective horizontal and vertical proportions authorization model

Tasks, performed by the Department: Revealing and analysing the national and international laws and the connecting professional literature, systematizing the material of knowledge, establishing the analyses. Researching the social aim system of the authorization, delegating official responsibility, overseeing the relations of powers and competence
Duration: 01.10.2009-15.12.2009
Principals: National Transport Authority

3. Comparative analysis of the transport authority, administrative regulations of the EU member states
Type: commission
Aim: To examine the operation of national transport authorities operating in the EU and within this to examine the regulation, authorization and control activity of the good- and carriage of passengers area, to explore the differences and identities, to examine the best practice
Tasks, performed by the Department: Revealing and analysing the national and international laws and the connecting professional literature, systematizing the material of knowledge, establishing the analyses. Introducing the position and role of administrative law in the jurisdiction, researching the connection system of administrative law and economic law in the sector evaluation, comparing the certain regulation models. Searching for the elements of best practice. Making recommendations for the increase of the efficiency of the national regulation.
Duration: 01.10.2009-31.03.2010.
Principals: National Transport Authority

KEYWORDS:
constitutionalism of public administration, public administration autonomies, research of jurisdiction, research of telecommunications and communications systems, research of public services, law of public finances



DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Public and Private International Law

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Research profile:

– Prohibition of use of force and intervention in international law
– International protection of human rights
– Reform of the United Nations
– Responsibility of states in international law
– Responsibility for damage in international environmental law
– Matters of nationality in international law
– Matters of state succession in international law
– Questions of international jurisdiction
– Rule of law in international law
– Responsibility for nuclear damage
– Nuclear disarmament
– Common trade policy of the European Union
– Law of the information society and its aspects in the law of the European Union
– International copyright law, with special regard to the regulations of the European Union
– Substantive legal questions of the European Union
– Practice of risk capital
– Legal personality of the European Union
– International legal aspects of Union citizenship

Keywords:

common trade policy of the European Union, human rights, international environmental law, international jurisdiction, international law, intervention, law of the information society, nationality, nuclear disarmament, responsibility for nuclear damages, rule of law, state responsibility, state succession, United Nations, use of force



DEÁK FERENC FACULTY OF LAW AND POLITICAL SCIENCES
Department of Private Law and Civil Procedural Law

Head of department: Dr. Barnabás Lenkovics
Position: University professor

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Research profile:

- Civil law, general, personal rights, right in rem, property system, law of succession, human rights
- Law of obligations, invalidity of a contract, breach of contract, Anglo-Saxon law
- Hungarian and European civil procedural law, European insolvency law
- Intellectual property rights, copyright law, industrial law protection
- Family law, medical law
- Consumer law, compensation responsibility study

Keywords:

state- and legal science, civil law, civil procedural law, personal rights, right in rem, property system, human rights, intellectual property law; copyright, industrial law protection, law of obligations



PETZ LAJOS
INSTITUTE OF HEALTH AND SOCIAL STUDIES
Department of Health Sciences

Head of department: Dr. Sándor Nagy
Position: University associate Professor

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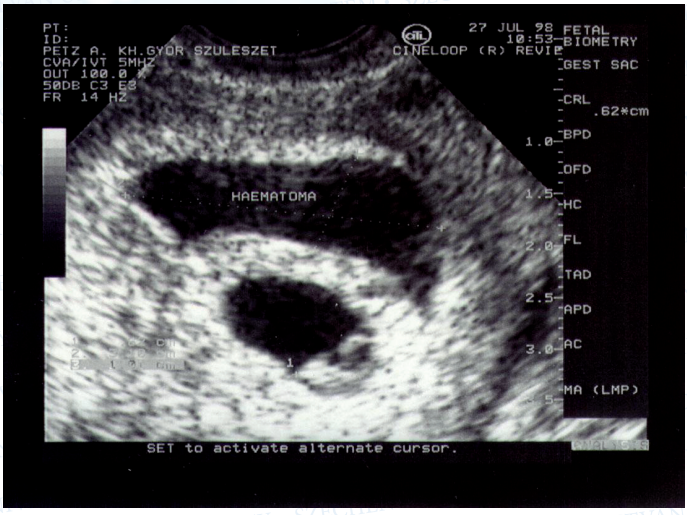
Research profile:
- State of health, lifestyle, quality of life, fitness condition,
- Career choice motivation and value system of college students
- Embryology, prenatal diagnosis, genetics
- Gynecologic laparoscopy
- Pregnancy liver diseases
- Pancreatic surgery
- Intima-media test in the estimation of the arteriosclerosis
- The role of the civil and non-profit sphere in the interest of promoting the local communities and local social integrations
- The capsule endoscopy study

Applied Methods / Special tools:
- Spiroergometer
- Ultrasonography
- Endoscopic and laparoscopic laboratories
- Data collection, based on possibility-depending sample (with questionnaire and interview method)
- Anthropometrical tests (BMI, body fat percentage);
- Motoric tests (sit and reach test, flamingo test).
- Document analysis

Services:
- Preparing Health plan



Keywords:
state of health, lifestyle, quality of life, fitness condition, career choice motivation and value system, embryology, prenatal diagnosis genetics, genomic methods, pregnancy liver diseases, intima-media test, capsule endoscopy

PETZ LAJOS INSTITUTE OF HEALTH AND SOCIAL STUDIES
Department of Social Work

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Research profile:
- Inter-professional cooperation an collaboration in the field of human (especially social) services
- Development of community care: strategy in favour of social integration
- Alternatives of development of social work education
- Regionality and the role of sub-regions in the development of human (especially social) services
- The social role of the civil and non-profit area/organisation
- Innovations in the supply of alternative child day-care

Applied Methods / Special tools:
- Use of SPSS database handling software
- Application of qualitative research methods, with special regards to: interview techniques, application of focus groups
- Case studies
- Questionnaire surveys and analyses

Services:
- Popularizing the field of social and community work
- Student contemporary help within the circle of Széchenyi students
- Organization and development of voluntary work within the circle of Széchenyi students

References:
Research projects:

1. LdV EIPEN European Inter-professional Education Network project
   Type: revealing, analytical, developer
   Aim: To develop the base network of inter-professional education
   Tasks, performed by the Department: Preparing studies; editing, issuing publications; organizing workshops; delivering lectures; participating in conferences; operating a website
   Duration: 2005-2007
   Project partners: King's College, 'London'; University and Politechnic Of Oulu; Jagiellonian University, Krakow; Karolinska Institute, Stockholm
2. Participation in the Erasmus EIPEN Accompanying Measures project
   Type: revealing, analytical, developer
   Aim: To develop the European network of inter-professional education, to research inter-professional education.
   Tasks, performed by the Department: Preparing studies; editing, issuing publications; organizing workshops; delivering lectures; participating in conferences; operating a website
   Duration: 2008

Project partners: King's College, London; University and Politechnic Of Oulu; Jagiellonian University, Krakow; Karolinska Institute, Stockholm; University of Ljubljana; Ghent University

3. LdV Community Care Approach: A Strategy for Social Inclusion project

Type: revealing, analytical, developer

Aim: Do develop a social work network that has a community care approach, to prepare education practice teachers that have a community care approach

Tasks, performed by the Department: Issuing a methodological manual for education; preparing studies; preparing surveys, analyses; organizing and arranging further education courses for the field teachers of communal social work; operating a website

Duration: 2006-2008

Project partners: Debrecen University, Babes-Bolyai University, Cluj-Napoca; Katholische Fachhochschule Niederrhein, Aachen; Universidad Publica de Navarra, Pamplona; Vilnius University, Solna City

KEYWORDS:

social adaptation and integration, community care, community work, education for practice teachers, practice in the field for students, development of social work education, role of regionality and sub-regions, inter-professional education in human profession, professional and research networks, civil and non profit area/organisation, child alternative day-care



PETZ LAJOS INSTITUTE OF HEALTH AND SOCIAL STUDIES
Physical Education and Sports Centre

Head of department: Tamás Gyömörei
Position: Physical Education Teacher

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Research profile:
- Examination of fitness condition, risk factor check-up in the circle of university students and employees
- Lifestyle survey, fitness examinations, risk factor check-up in the circle of leisure-time athletes, organized by the university sport club
- Sport financing and source utilization, governmental role in Hungarian sport, the economic effects of the sport sector on macro- and micro levels

Applied Methods / Special tools:
- Indirect ergometry
- Spiroergometry
- Anthropometry (physique, body composition)
- Motoric tests (Leger-Lamber test, sit & reach test, Flamingo-test, hand grasping power test)
- Interviews, cost-benefit analyses, impact assessments

Services:
- Fitness examinations and consultancy (lifestyle and nutrition)
- Performance and power diagnostics for leisure-time and first-class sportsmen
- Training load-advice, preparing a training plan

References:
Research project:

"Lifestyle programmes, training for health and forming approach"
Code Number: TÁMOP-6.1.2/A/09/1

Keywords:
fitness condition, lifestyle, fitness level, performance-increase, prevention, sport financing, governmental-local authority roles, source involvement-utilization



VARGA TIBOR
INSTITUTE OF MUSICAL ART

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Beosztás: College professor

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Two Departments are operating in the Institute:

- Department of Solo Instruments and Music Theory
- Department of Orchestral Instruments

Research profile:

– History of Instruments
– Performing of artist traditions
– Development of keyboard forms
– Music pedagogy

References:

Researches:

1. The history of the organ instrument
   Aim: To review the several decade history of the organ, being one of the first (and determinant instruments for centuries) in the European music culture Connections of liturgical and instrumental music
   Duration: I. semester 2005
   Partners: Liszt Ferenc Academy of Music Budapest; Musikhochschule Graz; Benediktiner Abtei, Ottobeuren
2. The emergence and development of the harpsichord
   Aim: To introduce the literature of the predecessor of the piano, the most important baroque solo and continuo instrument
   Duration: II. Semester 2008
   Partners: Liszt Ferenc Academy of Music Budapest; Universität Wien
3. The presence of musical historicism and its effect on today's performing art
   Aim: To analyse the movement, starting after the second world war that tried to reconstruct the practice of contemporary music playing based mainly on the contemporary documents of music playing of the baroque era
   Duration: I. semester 2006
   Partners: Liszt Ferenc Academy of Music; DE Department of Art; Oulu Conservatory
4. Performing problems of contemporary Hungarian piano music pieces
   Aim: To introduce and authenticate performances of contemporary Hungarian piano music pieces that originated after the second world war and are rarely found in concert life
   Duration: II. semester 2005
   Partners: Papp Lajos composer, Hannover; Liszt Ferenc Academy of Music, Körmendy Klára head of department
5. Notation problems of contemporary chamber pieces
   Aim: To help the performance possibilities of musical compositions and the technologies of score

reading by examining the music of the 20th century, which developed new score writing methods
Duration: II. semester 2008
Partners: Liszt Ferenc Academy of Music; University of Pécs - Departments of Arts

6. The school of Miklós Hubay and the performer stylistic marks of his violin pieces
Aim: To examine the world-famous Hungarian violin school that was founded by Miklós Hubay (an impressive person in his own right), dated from the second part of the 19th century
Duration: II. semester 2007
Partners: University of Szeged - Departments of Arts; Liszt Ferenc Academy of Music
7. The centuries of harpsichord literature
Aim: To introduce the literature of the most important baroque solo and continuo instrument
Duration: I. semester 2009
Partner: Liszt Ferenc Academy of Music
8. Italian keyboard forms in the 16th-17th century
Aim: To follow the origin and development of early baroque keyboard forms in Italy
Duration: II. semester 2009
Partners: Liszt Ferenc Academy of Music; University of Debrecen - Department of Art; Oulu Conservatory
9. The history of toccata until the harpsichord toccatas of J.S.Bach
Aim: To follow the origin and development of the most popular baroque form until J.S. Bach
Duration: I. semester 2007
Partners: Liszt Ferenc Academy of Music; Messina Conservatory
10. The piano teaching traditions of the Gnesin Institute Moscow
Aim: To examine Russian conservatoires, which have produced some of the most world-renowned pianists, and of particular importantance is the Gnesin Institute. To focus on the methods of selection and improvement in this institute.
Duration: I. semester 2008
Partners: Gnesin Institute Moscow, Csajkovszkij Conservatoire Moscow
11. Alexander method
Aim: To examine the improvement of physical deformations caused by the musical practice, wrong carriage
Duration: 2007-2009
Partners: Liszt Ferenc Academy of Music, Eötvös Lóránd University
12. Musical work capacity care – Kovács-method
Aim: To examine special gymnastic- and lifestyle proposals against unilateral physical load
Duration: 2008-2010
Partners: Liszt Ferenc Academy of Music, Semmelweiss University, Eötvös Lóránd University
13. Healthy breathing technique in the singing sound-formation
Aim: To get acquainted with the mechanism of breathing, to attain breathing techniques essential for the technique of singing
Duration: I. semester 2009
Partners: Semmelweiss University, Hungarian State Opera House



KEYWORDS:
instrument history, performing artist traditions, keyboard forms, music pedagogy

SZÉCHENYI ISTVÁN UNIVERSITY

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