



STU Online

Slovak University of Technology in Bratislava



Research on STU Bratislava

Research at the university is supported in all areas, in which higher education is realised, mainly in the second and third degree of a study. The STU engages its students into research activities and in this way tries to utilise intellectual potential of the young generation. The STU comes out of the assumption, that experiences and skills to search creatively for new solutions of old problems, which young people acquire during the research process, very often overgrow social effect of a “researched” problem.

Research activities are organised in projects and financially are supported from external sources mainly from grants of the Science grant agency VEGA, The Cultural and educational agency KEGA, The Agency for support of science and technology APVT (at present Agency for support of research and development APVV), grants for higher education institutions from the Ministry of education in the area of applied research and from state programs projects for research and development. It means that every collective of researchers must look for financial sources for scientific or creative activity outside the university; it means they must apply for financial support in a direct competitions. This culture of financing exists for years and it guarantees increase of the quality, because a mechanism of such financing contains explicit elements of external evaluation of the quality of proposed activities.

Great attention is paid to international aspects of research and the university places of work build up their relations with partners on the principle of professionalism regardless of geographical borders. At the same time they look for all available sources of financing. Important projects are those, which are based on the bilateral co-operation, international grant schemes, but mainly projects financed from the framework programs of the EU – 4th, 5th and 6th Framework program. Permanently stable place is occupied also by the Socrates Erasmus and others.

In the harmony with the trends in Europe also the STU begins with focusation and intensification of research activities towards perspective trends. In the year 2003, basic orientations of research and development were set up in the harmony with European trends and abilities of the university, experiences of its employees, achieved results and built up infrastructure. The STU steers its basic orientation of development of science and technology mainly to perspective and interdisciplinary areas: information technologies for society, new materials and technologies including nanotechnologies and biotechnologies and sustainable development including sustainable energy systems, technique of ground transportation and complex quality of environment.

The task of focusing the STU is secured mostly by means of search for and acquisition of new financial sources from the Slovak republic and EU programs, mainly from the 6th Framework Program of European Union and from the state programs for science and technology of the Slovak republic. Orientation of these programs is in the harmony with main trends of development at the STU and acquirement of finances from these sources secures more significant development of places of work as well as international recognition.

The STU is looking also for possibilities to create and realise larger research plans. These are in majority plans in the areas indicated by industry and often also realised in co-operation with industry and other partners. We can mention laboratory ONMiST as common place of work of semiconductor company ON Semiconductor and the STU, the Centre of plasturgy, the Centre for quality assurance in automobile industry, which is in preparation, or Centre for non standard measurements. For the period of year 2006 the university together with other partners prepares establishment of larger centres of excellence in research, at the beginning in the form of virtual centres utilising research potential of best places of work in Slovakia.

Among the most important places of work, except of many others, belong also Central laboratories of the Faculty of Chemical and Food Technology - NMR; laboratories in the part of Bratislava – Trnávka – places of work for civil engineering technology, high voltage

laboratories, testing, laboratories for water management of the Faculty of Civil Engineering, Hydrotechnical pavilion of the Faculty of Mechanical Engineering, Pavilion of heavy technologies of the Faculty of Mechanical Engineering and in its framework for example laboratories of corpuscular materials or material technological laboratories of the Faculty of Material Sciences in Trnava. Complete overview can be obtained at web address: www.strinet.sk.

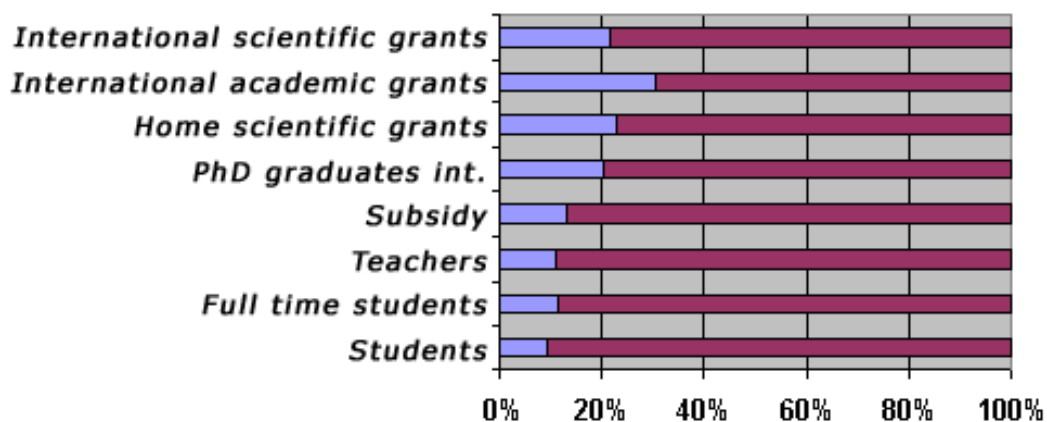
The STU belongs among dominant universities in Slovakia from the point of view of research. For example, in grant successfulness it has during last years achieved one quarter portion in international grants for solution of international grants obtained by all Slovak universities. Similarly dominant post, nearly 30%, has the STU also in acquirement of home grants. We can state growth in purpose financing of projects.

Structure of home sources is changing. Originally dominant position of grants of the Ministry of Education of Slovak republic (from the budget of universities) is step by step replaced with other possibilities. Significantly increasing trend can be seen in the field of projects financed from the central Agency for support of science and technology (APVV). Between the years growth in financing of the STU projects approaches some tens of percents. Pleasing is also the fact, that during the year 2004 the STU submitted 54 new proposals and 36 projects were accepted and approved, what is more than average successfulness and this reality provides quite sure perspective for better financing of research at the university in the following period.

The STU has now strong position in the area of solution of tasks supported from the State programs for research and development. The STU participated on the solution of 30 (thirty) projects supported from the State program projects (total number of supported projects was 69), either as the main contractor of a project, or as the co-contractor or as the subcontracting subject, activities were realised on the basis of a contract on work. It can be unequivocally stated, that State programs for research and development have brought strong financial power to financing of research and they represent main intensification instrument in the financing of research at the university.

International co-operation projects and international grants

Proportion of the STU in various indicators depicting total production of all Slovak public higher education institutions (year 2004) is as follows:



International co-operation is very important for the STU. Partner relations are established on the principle of professionalism with no regard to geographical borders. The STU is

intensifying its international engagement in research projects. In the year 2003, greatest proportion from all acquired grants represented the SPECTRA – the EU Centre of Excellence in the field of space planning, urbanism realised at the Faculty of Architecture, in the year 2004 it was the Faculty of Chemical and Food Technology, which succeeded to acquire greatest volume of research grants from abroad. It is worth to mention also the Department of microelectronics at the Faculty of Electrical Engineering and Information Technology, which is one of the most successful places of work in Slovakia in acquirement of international grants.

The level of the internationalisation of the STU activities is presented in the Attachment No 3.

Framework programs of the European Union

The Slovak university of technology has successfully participated on the solution of more than 50 projects of the 5th Framework Program of the European Union. In the end of the year 2004 the 22 consortia, in which the STU has its representation were successful in submission of projects to different calls the 6th Framework Program. From the point of view of successfulness of submitted applications it is very good result in the European measure. From the point of view of submitted projects we can say that the STU is very successful the 6th Framework Program. The problem but resides in a low financial volumes. It proves, that to acquire larger units of solution of projects (“work package”) is for the university very difficult, mainly due to old fashioned technical and technological equipment. The problem is represented also with administrative and accounting demand of the EU rules under the conditions of the Slovak legislation which is valid for Slovak universities. Similarly, the problem is also with re-financing of projects and with the coverage of the VAT.

Pre-accession and structural funds of the EU

With the accession of the Slovak republic to the European Union very actual has become also the possibility to draw financial sources from structural funds. For the region of Bratislava it is above all the European Social Fund oriented to the improvement of the quality of human sources. First calls were published in the year 2004. Till the end of the year 2005 the STU has obtained several tens of projects from these sources.

Publications

Results of research were projected into publication activities and outputs for practice. Publication activities are evaluated every year. In the area of journal production in the category CC the proportion of the STU is 26% from the total production of the Slovak universities.

Related activities

The STU as a technical university tries to support not only “pure research” but also co-operation with practice and in this way also transfer of knowledge into practice. In this area the STU realises nearly one thousand of direct contracts per a year. With regard to the influx of capital to Slovakia, the management of the university orients its efforts to the extension of communication ways towards professional, but also laypersons public. In this area good experiences from the work of the Know-how centre of the university are used as the centre operates on the basis of projects since the year 2000.

Main task of the Know-how centre is to support transfer of knowledge as well as preparation of new direct scientific co-operations with partners by the means of provision of relevant information. In the year 2004 the STU has formalised Know-how centre as the university place of work and in the year 2005 the centre began to realise its activities with new tasks, e.g. the Knowledge transfer office, respectively the valorisation unit. Unification of data base

instruments of the Know-how centre and the university is the priority, mainly in the area of registration of research projects and other information in such a way, that supply of data bases with primary information is incorporated into the natural processes of the management of the university.

The STU has set up the aim to present concrete results achieved in the area of science, technology or arts also in a larger media environment. Just now it is starting project oriented the popularisation of research the “Editor’s office of the Know-how centre”. This support will represent concrete contribution to the fulfilment of the action plan of the European Commission “Science and society”. At the same the university has prepared selection of interesting concrete research outputs for practice and in the co-operation with the Union of electrotechnical industry of Slovakia supplies them as the examples of good results with the aim to facilitate establishment of new contacts with industrial practise.

The SU selects and presents significant research places of work of the university. In the year 2003 the STU established network of High-tech laboratories and elaborated the list of important research places of work at the STU. Since the year 2005 the STU tries to build up larger platform by the means of a network STRINet – the Slovak research and innovation network, which serves as the information centre on expertise capacities. The STRINet connects places of work which achieved the expert level and information on their characteristic features is available via Internet web page.

The university is looking for possibilities also in the area of stimulation and support of the establishment and development of small companies, which are engaged with top technologies or highly sophisticated and innovative activities. The STU tries to link together all available programs for support of such processes and to offer them by the means of the University business incubator. This business incubator was built up from the financial means of the pre-accession fund of the EU – PHARE – cross border co-operation with Austria in the co-operation with several partners. The incubator can provide support to nearly 30 companies with more than 100 employees. Central mission of the Incubator activities is pre-incubator program supporting the establishment of companies InQ^b.

More information about Slovak University of Technology in Bratislava you can find on web site:

www.stuba.sk



Academy of the Police Force in Bratislava SLOVAKIA



Objectives and Long-term Directions of the Academy

Objectives and methods of the educational process at the Academy of the Police Force in Bratislava are directly determined by university education reform being currently held in Slovakia. Within a newly creating space of European university education, Slovakia has accepted strategic goals of Lisbon Process as well as basic agreements and conclusions of Bologna Declaration. Slovakia reacted in a way that adopted Conception of Further University Education Development in Slovakia for 21st century and in 2002, when a new university act was adopted, started to transform university education. In compliance with the new act a new obligation has come up – from academic year 2005/2006 - to accept students for new study programs within a three-degree university education (bachelor, master, doctorate) on the basis of the credit system ECTS, within a new system of study specializations system resulting from an international classification ISCED 97.

Academy of the Police Force in Bratislava forms a co-part of the university system and as a governmental university it educates and trains the police specialists, other governmental and non-governmental security services according to approved study programs.

On the basis of recommendation stated by Accreditation Board of the Slovak government since September 2, 2004 the Academy of the Police Force has been entitled to provide and after successful accomplishment to grant relevant academic title in the following accredited study programs:

- “Security-Legal Protection of Persons and Property” in a study specialization 8.3.1. Protection of Persons and Property in the first (bachelor), second (master) and third (doctorate) study degree
- “Security-Legal Services in Public Administration” in a study specialization 8.3.2. Security Public-Administration Services in the first (bachelor) and second (master) study degree.

Study program may be accomplished in daily or external forms. Bachelor study takes up to three years and is completed by final work defense and state exam. Graduates are awarded academic title “bachelor” (Bc.). Master study takes up to two years and is completed by thesis defense and state exam. Graduates are awarded academic title “master” (Mgr.). Doctorate study takes up to three years within internal study and five years within external study and is completed by dissertation exam and dissertation work defense. Graduates are granted scientific-academic title “philosophiae doctor” (PhD.).

Study programs “**Security-legal Protection of Persons and Property**” within study specialization 8.3.1. Protection of Persons and Property are realized in separate study degrees and focus on training of university-qualified specialists and managers inevitable for the Police Force (patrol, transport, criminal, border and alien police, investigation) and for other governmental and non-governmental security services being in charge of the tasks related to protection of persons and property.

Bachelor study program is aimed at theoretical knowledge and practical experience inevitable for basic management and specialized posts within separate security services. Applicants are required to have accomplished secondary special education having passed school-leaving exams. The same requirement is put on security services that additionally must have accomplished specialized security training and at least spent one year on the ground.

Master study program is aimed at theoretical knowledge and practical experience inevitable for middle and top management and specialized posts at specialized security services. Applicants must have accomplished university education of the 1st degree in a given or related study specialization.

Doctorate study program focuses on acquiring the ability to provide independent managing, creative and scientific work. Graduates are suited for the posts such as top managers, analysts and conception designers on middle and top management, scientists-researchers or university teachers of a study specialization Protection of Persons and Property. Applicants must have fulfilled university education of the 2nd degree in a given or related study specialization.

Study programs “**Security Services in Public Administration**” within study specialization 8.3.2. Security Public-Administration Services are realized in separate study degrees and focus on training of university-qualified specialists and managers inevitable for public administration which fall under the Ministry of Interior of SR as far as central and local state administration and self-government are concerned. Those are in charge of the tasks related to general internal administration, civil protection, crisis management and fire protection.

Bachelor study program is aimed at adoption theoretical knowledge and practical experience inevitable for basic management and specialized posts in separate security activities. Applicants are required to have accomplished secondary special education having passed school-leaving exams. At the same time they have to meet the requirements for a job in public administration.

Master study program is aimed at adoption theoretical knowledge and practical experience inevitable for middle and top management and specialized posts at specialized central and local state administration. Applicants must have accomplished university education of the 1st degree in a given or related study specialization. Moreover they have to meet the requirements for a job in public administration.

One part of the educational activities of the Academy of the Police Force in Bratislava is carrying out education in the **system of further education of police officers** which reflects the contemporary needs of policing – to innovate, to extend knowledge and skills, or to retrain. It follows the education gained at either governmental or non-governmental schools.

Further education at the Academy of the Police Force is carried out in these forms:

- a) *Specialized police education* – is aimed at police officers with university education from non-governmental and military universities. Graduates of the specialized police education get police expertise and qualification for officer’s positions in individual services of the Police Force. The study takes up to six months and is completed by final exam. The graduates get a certificate of the final exam and of accomplishing the study in further education, which is needed to carry out the specialized activities in the Police Force.
- b) *Study for Management Positions* – is aimed at police officers who have completed their university education and are appointed for management positions in individual classes of management in the Police Force, or police officers who are considered to be appointed to management positions. The study provides new knowledge, skills and abilities necessary for managerial work in the Police Force. The content and specialization of the management position study is based on the requirements for performing the respective management positions. The study has a combined form; it

has 160 lessons and is accomplished by an expert attestation, which tests the expert and personal prerequisites to perform the management position. The attestation has a form of an interview and a defense of the final thesis. The graduates are awarded a certificate of completing the management position study.

- c) *Qualification courses* – provide knowledge, skills and habits necessary for getting expertise, which are needed to perform certain activities in the Police Force. The extent, content and focus of the course are based on the requirements of individual police services. The qualification courses are completed by final exam where the knowledge, skills and abilities are tested. The graduates are awarded a certificate of expert qualification to perform the respective activities.
- d) *Retraining courses* – provide expert knowledge and habits in an extent enabling a police officer moving from one position to a position in a different field (e.g. from traffic police to criminal police) to be ready to carry out the duties in the new service in a qualified way. The retraining courses are completed by a final exam where the knowledge, skills and habits to perform the new function are tested. The graduates are awarded the certificate of expert qualification to carry out the function for which they have retrained.
- e) *Excellence courses* – provide the police officers with new knowledge and skills reflecting the important changes and innovations in the field of their service (*innovation excellence courses*), or they supplement the knowledge and skills of police officers with new up-to-date information and working procedures, and support the professional performance in the respective service (*supplementing excellence courses*), such as IT courses, mobile telecommunication technology courses, psychology of public relations courses etc. The excellence courses are completed by final interview and the graduates are awarded a certificate of qualification to carry out new activities in their service.
- f) *Language education* – is carried out through intensive and excellence courses and follows the previous language training. Its aim is to develop language knowledge that will be used in various departments of the service. The extent and length of individual courses depends on the degree of the police officer's knowledge and on the specialization of the course (e.g. intensive language course for the candidates of the MEPA course or other international activities). The graduates are awarded a certificate of the ability to use the foreign language on the respective level.
- g) *Supplementary pedagogical study* – is aimed at teachers at resort police schools and at students of the Master's study at the Academy of the Police Force who are interested in gaining the pedagogical qualification to teach at specialized secondary schools of the Police Force together with their university degree. Teachers of police schools not having pedagogical education can get the pedagogical qualification in a three semesters long part-time study. The students of the Academy of the Police Force have the opportunity to get the pedagogical qualification in a four semester supplementary study that runs simultaneously with their Master's course. The study is completed by a final exam and final thesis defense. The graduates receive a certificate of pedagogical qualification.
- h) *Scientific preparation* – enables the police officers to get scientific qualification or a scientific-pedagogical degree in the respective specialization. The doctoral study at the Academy of the Police Force is carried out as a university study of the third degree. The habilitation and inauguration procedures have to comply with certain legal regulations binding for the universities of the Slovak Republic. After passing the required procedure the applicant is awarded the scientific-pedagogical degree "Associate Professor" of "Professor" in the respective field.



Institute of Forensic Science
of the Slovak Republic Police Corps



About Institute

Kriminalistický a expertízny ústav Policajného zboru (Institute of Forensic Science) is part of Slovak republic Police Corps. It was founded in 1991 by decision of minister of Interior as institution to provide expertises in criminalistics (forensic science) for Police Corps of Slovak Republic and other institutions active in law enforcement. KEÚ PZ is the successor institution of the former Czecho-slovak Kriminalistický ústav (Institute of Criminalistics).

Currently Institute employs approximately 200 police experts and 50 nonpolice technicians.

Institute is registered at Ministry of Justice as special expertise institution and has implemented ISO 9001 quality management system

The main activity is providing of expertise reports for law enforcement bodies in Slovak republic. Institute examines evidence and seizures from crime scene provided by authorized organs. On request of Police or authorized organs experts of the Institute take part in crime scene processing team. The experts elaborates in written form the expert-witness statements and expert opinions, in which they answer questions given by investigator or other legitimated organ. Likewise experts give their expert-witness opinion to the court. Based on the "Organizational rules of the Section of Investigation and Climinalistic Expertises of Plolice Corps" an expert is in the scientific questions independent and in estimation of evidence he follows rules of science only.

The Structure of Institute:

Institute is independent unit of Police Corps Presidium

- Internal and analyst department
- Economic department
- Department of aplied psychophysiology

- Division of Forensic Informatics and Technics
 - Forensic informatics
 - Video
 - Voice identification
 - Forensic photography
 - Forensic technics
 - Methodist

- Division of Natural Science Examination
 - Biology department department
 - Documents department
 - Chemistry department
 - Hand-writting department

- Division of Forensic Identification
 - Ballistic department
 - Finger, palm prints and trasology department
 - Mechanoscopy and defectoscopy department
 - Department of forensic engineering (forensic and fire electrotechnics , metalography)
 - Pyrotechnics department
 - Eurodac department

- Banská Bystrica Division
 - Department of Natural Science Examination
 - Department of Forensic Identification

- Košice Division
 - Department of Natural Science Examination
 - Department of Forensic Identification

Description of services

Services in forensic field offered by the Institute may be summarized as follows:

Ballistics:

state estimation of weapons and ammunition, identification of weapons on the basis of seized cartridges or bullets, comparison of seized cartridges and bullets or cartridges/bullets from seized weapons with collection of those from unidentified crime, identification of weapons according seized cartridges or bullets, external ballistics questions (e.g. bullet trajectory), including determination of injury effects of bullets.

Pyrotechnics:

lifting and analysis of postblast rests, securing and liquidation of explosives and old army ammunition, securing and liquidation of snare explosive systems, co-operation in security checks of objects.

Chemistry:

determination of alcohol in blood, toxicological analyses, identification of drugs and pharmaceutical preparations, identification and analysis of abused drugs, determination of drugs in body fluids, identification and analysis of explosives, lifting and analysis of postblast residues, determination of shotgun residues, fire distance determination, analysis of car paints and glass splinters, identification of unknown substances, fibers and hairs (microtraces), identification and analysis of automotive fuels and lubricants, analysis of alcoholic beverages, analysis of cosmetics and household materials, analysis of soil and minerals, identification and analysis of food and foodstuff, identification and analysis of industrial products and materials, analysis and comparison of paints and lacquers, chemical, physico-chemical and instrumental analysis of exhibits, examination of fire and arson cases,

Hand- and type-writings & linguistic analysis:

identification of writer based on the analysis and comparison of hand-written documents and signs, typewriter identification, linguistic analysis of controversial texts and identification of author

Documents:

identification, examination and comparison of all arts of documents and related items, examination of banknotes and other valuables.

Voice analysis (phonoscopy):

adjustment and copying of voice records, phonetic, linguistic and electroacoustic analysis of voice recordings, voice identification

Biology:

identification of biological materials, serological analysis of evidence

Anthropology:

identification of bone and skeleton finds, identification and comparison of hairs.

DNA analysis:

forensic DNA analysis.

Mechanoscopy:

identification and comparison of tool marks, locks, locking mechanisms, its functionality and method of breaking, functionality and breaking methods for safes and security materials, broken glass, splinters identification and examination of mechanically destructed items or its parts examination of material faults in connection with industrial process and traffic accidents, tires examination as possible reason of accident, examination of industrial process accidents and fires related to technical state of equipment and personnel activity, examination of mechanical properties of materials from failed equipment and estimation of failure mechanism, determination of original state of important parts of vehicles related to possible reason of accidents, examination of latent or removed identification numbers and marks of metallic materials, firearms and vehicles.

Electrotechnics:

estimation of equipment failure, electrical current injury, examination of electrical appliances as reasons of fire or accidents, examination of electrical parts of vehicles in traffic accidents, technical state of security equipment.

Trasology:

identification and comparison of shoe and tire prints, identification and comparison of tooth marks, ear prints etc.

Fingerprints:

seizure, lifting, evaluation, comparison and identification of finger and palm prints.

Photography:

forensic documentation, documentation of examination results.

Informatics:

software piracy, attacks of information systems, internet crime, computer viruses, analysis of software and hardware, bank hacking.

Psychology:

verification of truthfulness of speaker.

Scientific & technical background

All of Institute employees in expert position have university education in science, technology or law complemented with specialized law enforcement officers education and/or further specialized education according forensic specialization. In the last years many officers attend training or visit forensic science laboratories abroad to complete knowledge and practice.

Employees of the Institute also participate on specialized education of Police corps officers and students at Police Academy. Institute organizes special courses for crime scene processing police officers to complete their specialized knowledge for everyday work.

To maintain Institute itself up to date on scientific knowledge and to apply it into practice, institute works on research according practical needs.

Scientific information is supported by Institute library with its collection of scientific books regarding forensic science and related sciences. At present Institute regularly receives plenty scientific journals.

Institute co-operates with forensic institutions abroad and also with Interpol. In the field of identification and analysis of abused drugs main partner is UNDCP Vienna. Institute is a National reference center of abused drug analysis.

In year 1998 Institute became a member of **ENFSI** (European Network of Forensic Science Institutions), which associates official forensic institutions from many European countries.