ANNUAL REPORT

BRNO UNIVERSITY OF TECHNOLOGY

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BRNO UNIVERSITY OF TECHNOLOGY 2010 ANNUAL ACTIVITY REPORT

is submitted as required by Act no. 111/1998 Coll. on universities. It has been set up on the basis of the 2010 University Guidelines published by the Ministry of Education, Youth, and Sports. It presents a wider public with data and substantial outcomes of all the activities related to Brno University of Technology as part of the Czech and international educational, research, and social space.

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RECTOR'S WORD

The BUT Annual Report documents the university's development in 2010, a year that ended in some difficulties, mostly economic ones, having impacts on BUT, other universities and society as well. Universities do not work in an isolated economic or social space and the steps undertaken by the government and its ministries to curb the public deficit have had and will have an appreciably negative impact on BUT as a whole, its faculties and constituent parts and, eventually, on each member of BUT's academic staff. Despite these problems, even in 2010 BUT was successful in its efforts to become a prestigious European university both in education and research.

In its activities, Brno University of Technology is guided by its Mission Statement. In this connection, I take it as a positive achievement that the BUT 2011–201 Mission Statement has been approved by the whole academic community.

The university has seen a number of achievements in education, science, research, and creative activities in engineering, natural sciences, economy, and art. In its introduction, the BUT Annual Report brings a summary of the most prominent achievements of science and transfer of technologies mentioning some significant events in the life of the university in 2010.

Interest in study at BUT has been increasing with the number of applicants being again greater than last year. Knowing this, BUT is mainly trying to improve the quality of teaching. The programmes offered in 2010 were again more numerous and diversified. There are also a larger number of courses taught in a foreign language as well as joint and double-degree programmes. The prestigious ECTS Label and DS Label certificates awarded to BUT for the period of 2009-2013 by the European Commission testify to its quality as a higher-education institution.
One of the remarkable achievements of 2010 was the winning of virtually all funding needed to build centres of excellence at the faculty level and the finishing of the preparatory work on the CEITEC and IT4Innovations projects. Negotiations in Brussels concerning the Central European Institute of Technology (CEITEC) project entered their final stage in late 2010. In this year, BUT was among those Czech universities receiving the most of the ESF funds. More than 7 billion CZK were received or negotiated in project funding. Currently, other projects are under preparation for priority axis 3 such as VAVINET: INFORMATION INFRASTRUCTURE OF RESEARCH AND DEVELOPMENT CENTRES, which is now at a next evaluation stage and projects focusing on technology transfer and protection of intellectual property.

When giving an overview of the previous year, one significant award received by BUT should be mentioned testifying to the way the university is managed – as the only domestic university, BUT ended up among the best seven Czech institutions in the Health – Education- Humanity category of the Czech Top Hundred competition. This winning position among the most diverse institutions and commercial and other companies is no doubt an appreciation of the way the university has long been managed.

Also BUT's traditional strength, that is, cooperation with the business sphere was made good use of. A gold medal was given to BUT at a building fair for a system of composite reinforcement of concrete structures. The Gold Medal of the 2010 International Engineering Fair received by BUT in the Cooperation with the Czech Research Organisations category for its Marabu pilotless aircraft was another remarkable achievement. It is also a pleasant surprise that BUT was second in the Best 2010 Cooperation competition organised by the US Chamber of Commerce in the Czech Republic, Association for Foreign Investment, and the ČSOB bank. It could also be mentioned that, of four Brno universities and participating institutes of the Academy of Sciences of the Czech Republic, it was BUT that won the most orders (33 of 55) through innovation vouchers and many other activities could be remembered through which our colleagues of the BUT academic community have left their marks in the development of the Czech economy either directly or through cooperation with companies.

In addition to its position as an educational and research institution, BUT also plays social and cultural roles. Last year the results of the creative activities of the faculties of architecture and fine arts carried off high awards from Czech and foreign competitions being presented at prestigious exhibitions at home and abroad.

A number of my colleagues who work on the Council of Higher-Education trying to positively influence the country's university environment also fulfil a socially important role. BUT representatives have long placed emphasis on the quality of work of universities particularly in teaching. It is, therefore, logical that they should participate in a national programme in an effort to improve quality assessment at universities and their parts and find optimal methods of quality assessment.

For a long time, BUT has been among best three percent of the world's (about 18000) universities according to the QS World University Ranking published regularly by The Times.

This achievement would never have been possible without the hard and demanding work put in by the BUT academics and non-academic staff contributing to the fact that Brno University of Technology is counted as an elite higher-education institution not only in the Czech Republic, but on an international scale, too, where it has gained the position of a respected and good modern European university.

Karel Rais, Rector of Brno University of Technology

SIGNIFICANT EVENTS AT BUT

BRNO UNIVERSITY OF TECHNOLOGY ACHIEVED GOOD RESULTS IN THE BEST HUNDRED OF THE CZECH REPUBLIC PRESTIGIOUS COMPETITION. IN THE HEALTH – EDUCATION – HUMANITY CATEGORY, IT FINISHED AMONG THE BEST SEVEN CZECH INSTITUTIONS. A PRICE WAS RECEIVED BY BUT RECTOR KAREL RAIS AT A GALA EVENING HELD IN THE SPANISH HALL OF THE PRAGUE CASTLE ON 26th NOVEMBER 2010.

< On 14th January 2010, President Václav Klaus appointed prof. Ing. Karel Rais, CSc., MBA, rector of Brno University of Technology.

As part of celebrations of the events of 17th November and an anniversary of the founding of the first Czech university in Moravia, an academic gathering was held at which Rector of BUT prof. Ing. Karel Rais, CSc., MBA, awarded three gold medals: to Rector of Masaryk University in Brno prof. PhDr. Petr Fiala, Ph.D., for his long cooperation with BUT and for his support for research activities and innovations, to prof. Ing. arch. Alois Nový, CSc., and to prof. Ing. František Pochylý, CSc., for his outstanding efforts in developing BUT and for his lifelong work. Rector awards were also given to excellent students. >

A new bronze relief was unveiled above the entrance portal of a Cartesian monastery, now housing the BUT Faculty of Information Technology. The relief has replaced an original silhouette of St. Bruno, founder of the Cartesian order destroyed when the monastery was abolished in 1782 as ordered by Austrian Emperor Joseph II. The author of the sculpture called „Invisible Network" is academic sculptor Michal Vitanovský. >

< The first graduation of students of an Economics and Management course of the European Business and Finance (EBF) degree programme at the BUT Faculty of Business and Management. EBF is a programme offered jointly by three universities: Nottingham Trent University (United Kingdom), Karol Adamiecky University of Economics in Katowice, Poland, and BUT.

^ The BUT Institute of Aerospace Engineering finished second in a Best 2010 Cooperation competition for its design and implementation of a VUT 001 Marabu aircraft to support the use of pilotless airplanes in the civil sector. The reward was given by the American Chamber of Commerce in the Czech Republic, Association for Foreign Investment (AFI), and the ČSOB bank, the project's general partner. The project was implemented by: První brněnská strojírna Velká Bíteš, a. s., JIHLAVAN airplanes, s. r. o., PLASTSERVIS-L, s. r. o., and the Institute of Aerospace Engineering at the BUT Faculty of Mechanical Engineering. At a 2010 International Engineering Fair, a team led by prof. Antonín Píštěk at this faculty received a gold medal for VUT 001 Marabu.

New temporary hydrogel biopolymer-based implants were developed at the Institute of the Chemistry of Materials from 2006 to 2010 that can be used for treatment of bones, cartilage, ligaments, and menisci. Composed of 3D biodegradable porous composite collagen, after planting stem cells, the hydrogels were implanted into animals in which serious joint and bone disorders were simulated which also occur in humans. When an affected tissue is healed, the hydrogel implant decomposes into non-toxic products. The results of the pre-clinical tests carried out seem to prove the beneficial influence of these hydrogels on the regeneration of a damaged tissue. In a next phase, these materials will be clinically tested on humans.

Members of experimental electrophysiology, rehabilitation technology, and ultrasound imaging teams from the Faculty of Electrical Engineering and Communication gained access to a large research project called International Clinical Research Center Brno (FNUSA-ICRC) in the Biomedical platform. An integral part of the St. Ann teaching hospital in Brno, FNUSA-ICRC is a new-generation scientific and research centre and a top public healthcare centre specialising in the prevention, early diagnostics and treatment of mostly cardio-vascular diseases and neurological disorders.

< Prof. Ing. Jiří Stráský, DSc., from the BUT Faculty of Civil Engineering received a Freyssinet Medal from *Fédération internationale du béton*, an international organisation for the development of concrete structures for his outstanding contribution to concrete structure development awarded by this organisation once in four years.

The BUT Faculty of Information Technology was successful in obtaining projects of the 7th EU Framework Programme under the ARTEMIS joint undertaking focused on information technology and small and embedded computing systems in particular, which is an extraordinary achievement. Four new projects were launched at the faculty in 2010 with budgets totalling about 50 million CZK. These projects will be joined by large international consortia including Honeywell, Sysgo, CAMEA, CIP in the Czech Republic as well as the Institute of the Theory of Information of the Academy of Sciences of the Czech Republic.

As the world's best concrete structure, „Footbridge over the river Svratka" in Brno received a FIB award. Apart from the chief designer of the footbridge prof. Ing. Jiří Stráský, DSc. (BUT Faculty of Civil Engineering), also other experts from the faculty participated in the project. They could also use the findings of the MSM 0021630519 research plan, Progressive, Reliable, and Durable Building Structures, and of the MPO FI-IM/185 project, New Economical Strong Concrete Structures.

Important workshops co-organized by the BUT faculties of architecture and fine arts were held at the BUT Faculty of Architecture: an international workshop on enlivening an old prison by a creative charge, attended by teachers and students from BUT, ENSA Nancy, UdS Firenze, and HTW Saarbrücken. A workshop supported by the Brno municipality and a 2B2A Brno–Barcelona Art and Architecture international workshop attended by students from BUT, Italy, France, Spain, and Portugal.

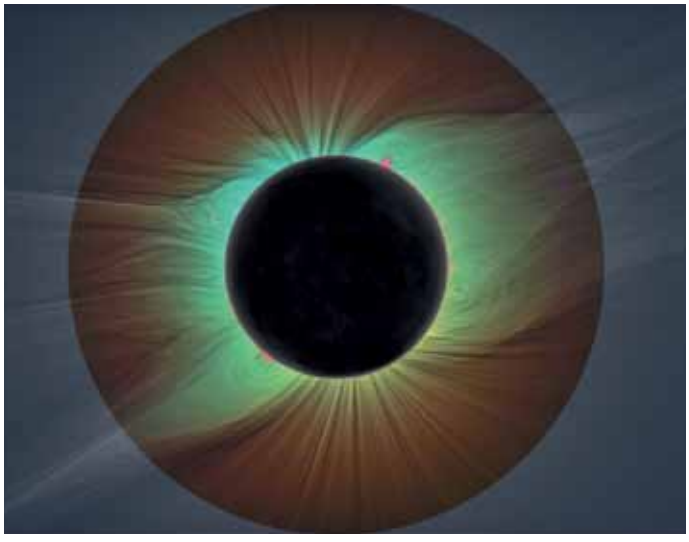
Co-organized by the BUT architecture and fine-art faculties, a joint meeting was held of representatives from the Czech artistic universities engaged in a Development Programme project to change the rules for financing creative activities at artistic universities and find common criteria for judging the quality of artistic works and performances. The meeting then went on by graphical and musical artists attending the opening of a FFA RECORDS exhibition in the Galerie Aula art gallery at the BUT Faculty of Fine Arts.

BUT Faculty of Fine Arts, Moving Image exhibition, Futura art gallery, Prague: exhibited were works by 18 authors working mostly with the moving image media – video and animation – presenting a group of artists graduated from or studying at the BUT Faculty of Fine Arts. This was the biggest ever exhibition of this group held in a prestigious Prague gallery. The exhibition received very positive reviews from art critics.

Receiving support from the BUT Rector, Minister of Justice Jiří Pospíšil, and Minister of Public Transport JUDr. Vít Bárta, the BUT Institute of Forensic Engineering organized an annual EVU conference of the European association for the research and analysis of road accidents.

The BUT Faculty of Civil Engineering held a 32nd 2010 WTA CZ international conference on the maintenance and reconstruction of buildings. Attended by 160 experts from the Czech Republic and abroad the event presented the latest findings concerning the maintenance of buildings of all construction types including those from bricks, concrete, wood and others.

On the occasion of the 100th anniversary of a separate electrical engineering study field at the then Czech Technical University in Brno, a new building of the BUT Faculty of Electrical Engineering and Communication was opened at Technická 10 on the Pod Palackého vrchem campus. In 2010 the construction was also started of another building of this faculty at Technická 12 next to the new building. >



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The Czech Astronomical Society awarded the honorary 2010 Kopal Lecture to prof. RNDr. Miloslav Drukmüller, CSc., from the Institute of Mathematics of the BUT Faculty of Mechanical Engineering for his outstanding results of the mathematical processing of the images of the solar corona taken during total solar eclipses. His laureate lecture was called: Unveiled secrets of the solar corona or the God gave man photography and, therefore, the Devil invented computers. Prof. Druckmüller has made unique contributions to the research of the solar corona, which also influences the broader field of plasma physics. His work may serve as an example of interdisciplinary approach to addressing the problems of stagnation of this field of solar physics.

BOOKS

Micromechanisms of Fracture and Fatigue: In a Multiscale Context, is the title of a book by prof. RNDr. Jaroslav Pokluda, CSc., and prof. RNDr. Pavel Šandera, CSc., which has filled a gap in the world literature on deformations and fracture of materials. In this book published by Springer, the authors have summarized the results of their lifelong research of the physical mechanisms of damage and multilevel modelling of deformation and fracture of materials.

A Grada Publishing Prize was given to Josef Chybík, Dean of the BUT Faculty of Architecture, for his book Natural Building Materials.

Lambert Academic Publishing published Biometric Cryptography Based on Fingerprints, a book by doc. Ing. Martin Drahanský Ph.D. describing a model of fingerprint and calculation of the biometric entropy that can be extracted from it. The book also lists possible uses of fingerprints in cryptography.

VUTIUM Press published a Czech translation of Mechanical Engineering Design, a textbook with world renown by J. E. Shigley, Ch. R. Mischke, R. G. Budynas sometimes dubbed the designer's bible. Apart from a gain of prestige, for the editor, the Czech translation has also meant a significant economic effect.

STUDENTS

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A Superbel.cz electric car was presented at the International Trade Fair in Brno by Ing. Jaromír Marušinec from the BUT Computer and Information Services Centre. Working with the EVG Group, Ing. Martin Solař, a doctoral student at the Faculty of Mechanical Engineering, and Bc. Miroslav Svačina, doctoral student at the Faculty of Information Technology transformed a Škoda Superb 2.0 TDI car into a pure electric car Doctoral students at the Faculty of Electrical Engineering and Communication are now designing a fast 40 kW charger that could reload the batteries in 30 minutes.

< Ing. Hana Druckmüllerová received a prize of the Minister of Education, Youth, and Sports. Since September, Ing. Hana Druckmüllerová has been a doctoral student of applied mathematics at the BUT Faculty of Mechanical Engineering. She has been rewarded for her work during her Master's studies. As a doctoral student, she works at the University of Hawaii.

Bc. Petr Kameník, a Faculty of Architecture student, and academic sculptor Oldřich Rujbr designed, manufactured and installed an astronomical clock at the Brno Náměstí Svobody square.

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In the Enterprising Head competition, Bc. Jindřich Fáborský, a student of the BUT Faculty of Business and Management, won the first prize for his OnlineLektor.cz project. This is a web application that can be used by language schools and private language teachers to find and teach students online.

Ing. Andrea Debnárová from the BUT Faculty of Chemistry won a prize for her paper, Contamination of Selected Parts of Brno by Heavy Metals, in the 17th annual competition of environmental degree projects founded by MVDr. Radslav Kinský. Thirteen universities participated in the competition.

Tomáš Svoboda, a first-year student of the BTBIO programme won a FUTURA prize in a Czech Heads 2010 competition. He designed and assembled his own X-ray device than can be used to take CT images. Being mobile, the device is of unique design.

< A team of BUT Faculty of Information Technology students consisting of Zbyněk Poulíček, Boris Procházka, and Petra Bačíková with its Geographical Information Assistant (GINA) won the first prize in the Microsoft Imagine Cup ČR advancing to the international finals taking place in Egypt. GINA is a software system for a mobile navigation device that can be used on a difficult ground. It is designed for rescue teams and expeditions operating in extreme conditions.

< VOX IUVENALIS, a choir successfully representing BUT at many contests at home and abroad, prepared a Christmas concert for BUT students and employees.

Co-organised by the city of Brno, the South Moravian Region, and BUT, a joint European festival of disabled and healthy athletes was held at the BUT athletic stadium on the Pod Palackého vrchem campus.

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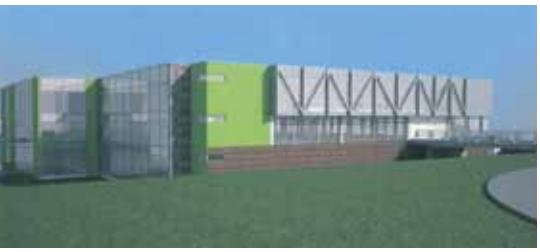
A team of BUT ice hockey players beat the Masaryk University team, 12-8, in the second ice hockey match in a series of matches between these universities.

In the presence of almost eighty nominated athletes and representatives from the university and faculty managements the best BUT athletes were announced and given extraordinary scholarships for representing the university in sports. The awards were given to those most successful athletes representing the university and the country who study at BUT. >

SIGNIFICANT PROJECTS

CENTRAL EUROPEAN INSTITUTE OF TECHNOLOGY (CEITEC) is a joint project of six Brno universities and research institutions. Last year BUT, as one of the main partners, helped coordinate the entire project and finish its preparatory phase. An independent assessment was carried out in 2010 at national and European levels with the CEITEC project receiving the most points among the large projects of the 1st priority axis of the Research and Development for Innovation operational programme. On 31st August 2010, the project was submitted for final assessment by the European Commission and its final approval is expected by the second quarter of 2011. The coordinators and managers of research programmes from Brno University of Technology groups have also helped configure the project's common internal rules and control documents. CEITEC is a European centre of excellence in natural sciences and advanced materials and technologies to become an important European centre of science and learning with state-of-the-art background and conditions for outstanding scientists. Its results will help improve the quality of human life and health. CEITEC is based on the synergy of seven research programmes. Placed in two localities – the BUT campus at Pod Palackého vrchem and the Masaryk University campus in Bohunice, its central laboratories called core facilities will serve as the main integrating element. Both will be organized as university interdisciplinary research institutions with the BUT coordinators managing two of the seven research programmes: advanced nanotechnologies and microtechnologies; advanced materials.

IT4INNOVATIONS CENTRE OF EXCELENCE is a unique project aiming to build a national centre of excellent research of information technologies. It should help concentrate a number of information-technology-related scientific fields to accelerate their advancement. A supercomputer ranging among the world's 100 most powerful computers should be launched by 2014 as part of the project. The project is being jointly prepared by five entities: VŠB – Technical University of Ostrava, University of Ostrava, Silesian University in Opava, Brno University of Technology, and Institute of Geonics AS CR, v.v.i. The IT4Innovations centre of excellence will combine an academic research centre with applied research. Computing at the centre will provide the platform for other branches of science and is structured in four interrelated key areas: 1) Information for People (IT4People) – research based on state-of-the-art information technology to improve the quality of life using modern information technologies. 2) Supercomputing for Simulations (SC4Simulations) – to resolve problems in industry, modelling in natural sciences a nanotechnologies (form optimization, materials design, biomechanical simulation), 3) Embedded Computing for Innovations (EC4Innovations) – research and development of embedded control systems applied in mechatronics and innovation medicine. 4) Theory for Information Technology (Theory4IT) – providing the theoretical background focused mostly on the development of new non-traditional computing methods (knowledge mining, theory of ant hills). The project is expected to receive a final approval by the European Commission by 2011.



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NETME CENTRE (New Technology Mechanical Engineering Centre) – the best second-priority-axis first-call project – received funding from the EU Structural Funds as first of the Brno projects. Prepared at the BUT Faulty of Mechanical Engineering, the project was officially launched on 1st January 2010. It develops and strengthens the long scientific, research, and development activities of the faculty's leading successful research teams engaged in the activities of five divisions (power engineering, processes and ecology; mechatronics; virtual design and testing; aerospace and automotive engineering; progressive metal materials). Already in the first year of its existence NETME achieved tremendous success. More than sixty experienced research and development workers participated in the new work, who guarantee final success by their expertise and potential for cooperation with the commercial sector. Even if previous examples and experience are often missing, the project internal control mechanisms have been set correctly and number of measures have been introduced to guarantee the centre's future smooth operation. Regarding the partners from the commercial sector, emphasis was placed on specific and individually targeted marketing for the future research to be guaranteed by agreements. In terms of investment, it should not be overlooked that IMOS, the company contracted, has made considerable advances in erecting the new D5 building (central building with unique research laboratories and he necessary offices, training and meeting rooms) and the C3a building (for fall tests of airplanes). IMOS could even finish the piloting and assembling the concrete frame of the D5 building and the bearing structure of the C3a building. Apart from the construction, the year 2010 also saw the beginning of a very difficult process of selecting the subcontractors for the research and development equipment and devices. It was the beginning of its implementation phase with the previously much disputed (and unused) funding allocated to the construction of regional research centres; by December 2010 the project's eligible spending exceeded 60 million CZK.

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RESEARCH CENTRE for Advanced Building Materials, Structures and Technologies (AdMaS) – a 2010 project of the BUT Faculty of Civil Engineering to build a centre for the research, development, and applications of advanced building materials, structures and technologies to be used by the building industry as well as for transport systems, urban, rural, and landscape infrastructures. The project costs of 818 million CZK will be partially covered by the funding received from the Research and Development for Innovation Operational Programme, priority axis 2, (69 million CZK) and from the Czech Republic state budget (123 million CZK) including almost 300 million CZK in instruments and equipment. The project was designed by the BUT Faculty of Civil Engineering in the years 2008–2010. Launched on 1st January 2011, the project situates the centre on the Palackého vrchem BUT campus. The research will focus on the technologies of diagnostics of structures and the factors influencing constructions, on structure designs and communal management technologies (water, waste, and renewable energy resources management in particular). Applications of new methods (such as remote air survey and measurement) in geodesy and geotechnical engineering will also form another major part of the project. This should result in designing modern, economical, and durable structures from modern materials possessing predefined reliability and energy demands, to enable their optimization in terms of the initial costs and costs related to their life cycle: building – use – recycling. Design of non-traditional structures with modern materials will be another focus of the AdMaS centre such as applications of non-metal materials in structure reinforcing. Part of the centre's activities will also be concerned with cooperation with commercial companies.

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NEW EXPERIMENTAL VUT 001 MARABU AIRCRAFT – with its design finalized in late 2009 by the Institute of Aerospace Engineering at Brno University of Technology. Having been run in, during 2010, the aircraft underwent a number of flight tests. Its fuselage being made from composite materials, the aircraft has an all-metal wing and horizontal tail assembly and is driven by a piston engine with propeller in thrust arrangement. Apart from this drive unit, the aircraft also possesses a small jet engine placed asymmetrically over the left side of the wing. VUT 001 Marabu is designed for experimental testing of equipment and installations developed primarily for pilotless aircraft. This testing is required by the new regulations to be introduced for the development and operation of civil pilotless aircraft. A number of applications may be expected in which pilotless craft are used. When designing VUT 001 Marabu, the Institute of Aerospace Engineering cooperated with a number of industrial partner receiving support from the Ministry of Industry and Trade, which shows the great interest of commercial companies in this area. The above-mentioned jet engine, for instance, was manufactured by První brněnská strojírna Velká Bíteš (designed among others for use in pilotless craft) and its parameters will be tested along with the plane. Due to the new legislation, plane equipment will have to be flight-tested for safety before being installed in a purely pilotless aircraft. VUT 001 Marabu will also make it possible for BUT to carry numerous flight experiments and measurements in other research programmes. Already in 2010 new aircraft versions were being designed to test new driving units. Next to the cooperation with První brněnská strojírna resulting in the newly designed TP-100 jet engine being installed on the aircraft, also a project was implemented to install an electric drive in a VUT 051 RAY prototype.

E3CAR NANOELECTRONICS FOR AN ENERGY EFFICIENT ELECTRICAL CAR – a project by the BUT Faculty of Electrical Engineering and Communication. It should enable major advances in the design of nanotechnologies, parts, miniaturized systems for the next generations of electric vehicles and accelerate industrial and commercial applications in the segment of electrical vehicles and cars. The project should increase the efficiency of electric power by raising mobility by 35 percent as compared with the current technologies. This will enable lower consumption of primary energy and raw materials reducing drastically the CO2 emission levels by using solar energy. The E3Car project is focused on the research and development of superpower and high-voltage electronic and nanoelectronic circuits and intelligent microsystems for electric cars, particularly power and high-voltage technologies, parts, and circuits for output transformation, energy renewal, output control, power modules, connection to a network of power stations and electronic systems for increased flexibility and quicker upgrade. As one of the FP7 European projects, the E3Car Nanoelectronics for an Energy Efficient Electrical Car project is coordinated by Reiner John from Infineon Technologies AG, Germany. The project consortium consists of 33 European partners including two universities and six research institutes and associations.

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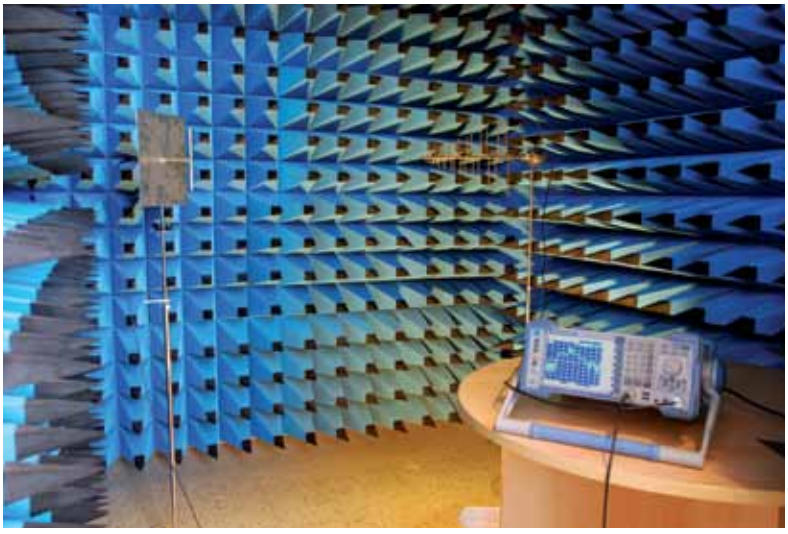
NANOSTRUCTURES TO STUDY NANOWORLD – Nanostrutures are created and studied in the dustfree labs of the Institute of Physical Engineering of the BUT Faculty of Mechanical Engineering to study the nanoworld physical phenomena. This study develops new fields of physics such as plasmonics and spintronics. These nanostructures (magnetic nanowire created in cooperation with TESCAN Brno) are also diagnosed in the dustfree laboratories of the institute's international partners (Laboratoire Louis Néel, Grenoble, France). This also involves work on research projects such as MSM0021630508, Centre of Basic Research (LC06040) or a project of the Nanotechnology for Society programme for which the institute employs over twenty five doctoral students and young researchers. Students also participate in nanostructure creation working on their own projects of the NPVII MSMT2E-08017 programme (Human Resource Development) coordinated by the institute in which 32 junior projects have been assigned each receiving an average of about 100 thousand CZK in funding.

DURABLE CONCRETE STRUCTURES – Continuing the finished project of the BUT Faculty of Civil Engineering, New Generation Durable Concrete Structures With Increased Resistance to Aggressive Environment, the project, Non-Metal-Reinforced Concrete Structures with Increased Fire and Aggressive Environment Resistance, as part of the TIP programme of the Ministry of Industry and Trade is concerned with the behaviour of a developed system of structure reinforcement in strongly aggressive environments and in situations with extreme temperature gradient such as during a fire. This determines the future use of such structures and elements in building, transportation, and industrial construction. Already in the first project year, the following has been achieved: • A gold IBF medal was won at an international building fair in 2010 for the reinforcement developed. • Patent no. 302103 was taken out for Non-Metal Building Reinforcement, Particularly Suitable for Pre-Stressed Building Structures and a Method of its Modification.

ORPHEUS-A2 ROBOTIC SYSTEM – is mainly designed for rescue and medical teams working in dangerous conditions. They have to operate even if there is a danger of a damaged building collapsing, the environment being contaminated with dangerous biological or chemical substances, an area with suspected high radiation doses, an explosion, or during a military mission. This all means that the lives and health of the rescue team members are at stake or the efficiency of their action is substantially reduced. The Orpheus-A2 exploring robotic system is being developed for remote prospecting in dangerous circumstances, search for persons or objects, and measuring of important quantities. Orpheus can operate virtually in every weather conditions efficiently searching even in total darkness, resisting contamination and decontamination. Moreover, it can search for persons in an advanced mode by switching on a combination of special sensors. For building Orpheus-A2, the Department of Control and Instrumentation could use its long experience in manufacturing resistant mobile robots designed for surveying dangerous and inaccessible places, searching for persons, and diagnosing their vital functions. This is a second-generation system designed for practical use using a rebuilt electronic and sensory subsystem and a new driving unit allowing for faster movement even in difficult ground areas. Controlled by air or by cable, Orpheus meets all the strict, mechanical environmental, and special resistance military standards.

CENTRE OF MATERIALS RESEARCH AT THE BUT FACULTY OF CHEMITRY – The centre has been in operation since 1st April 2010. About 230 million CZK have been invested from the Regional R&D Centres Operational Programme budget. By the end of 2013 a specialised regional centre as a separate faculty department will be built for the research of materials to strengthen the cooperation between the university research and the application sphere of contracted research and joined research projects to accelerate knowledge and technology transfer to the practice. The centre's next important role will be to engage Master's and doctoral students in projects of cooperation with the application sphere. The research conducted at the centre will pivot around two research programmes: 1. Inorganic materials with a special aim to provide sufficient research capacity for the silicate industry necessary to develop its innovation potential. 2. Transportation systems and sensors concerned with the questions of physical chemistry necessary to prepare and characterize the properties of systems, targeted transport of biologically active substances and organic-material-based sensors to be use, for instance, in diagnostics, medicine, and health care in general. Characterization of electrical and optical properties of such systems so that they can be used for advanced sensory, diagnostic and other applications. Constructing prototypes of system and offering them for commercial applications is another objective.

CENTRE OF RESEARCH AND USE OF RENEWABLE ENERGY RESOURCES – The project aims to build a research centre concentrating significant research, development, and innovation capacities for resolving problems of renewable energy resources. The research staff will be concerned with chemical and photovoltaic energy generation, electromechanics, electrotechnology, power engineering, electric drives, mobile robots and industrial electronics. At its first stage, the centre should involve three basic research programmes: 1. Optimization and control of electromechanical energy conversion, 2. Chemical and photovoltaic energy resources, 3. Optimization of energy conversion in systems with ecological energy resources. The project does not concentrate on research alone, but also aims to extend the cooperation between the university and the application sphere and to accelerate the transfer of new technologies to industrial practice. The planned for applications include environment-friendly transportation systems, robots with ecologically sound drives, and innovation of cogeneration. The project received over 260 million CZK in funding with more than 221 million CZK contributed by the European Union and 39 million CZK added from the state budget of the Czech Republic. More than 200 million CZK of the sum will be spent on equipping the laboratories with state-of-the-art instruments and devices and for rewarding the research team of the centre.



CENTRE OF SENSORY, INFORMATION, AND COMMUNICATION SYSTEMS (SIX) – The implementation of the centre began in August 2010 using almost 300 million CZK in funding from the Research and Development for Innovation Operational Programme. The primary research is concerned with generating, radiating, broadcasting, receiving, and processing communication signals in the 71 to 76 GHz, 81 to 86 GHz, and 92 to 95 GHz frequency bands expected to be broadly used in the near future. The communication systems in the new frequency bands attract attention with their large frequency spectres that are available. On the other hand, there is a need to resolve questions of large wave damping, suitable selection of modulation and coding method, signal equalisation, and circuit solution of partial subsystems. Next it will be necessary to start working on the problem of selecting suitable communication and control protocols, safety of the transferred information, and the development of corresponding networking technologies will have to be dealt with, too. Convergence of communication and information technologies will also be an attractive part of research. The properties of communication systems in the near future will require more precise signal processing. The sufficient bandwidth available will make it possible to transfer multi- and hyper-media signals. Attention will have to be paid to techniques providing the users with information through high-definition transfers. Also the man-machine interface properties are gaining in importance.

BASIC DATA

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1.1. Full name of the public higher-education institution, acronym used, address, names and addresses of all BUT faculties

Brno University of Technology, BUT, Antonínská 548/1, 601 90 Brno, http://www.vutbr.cz

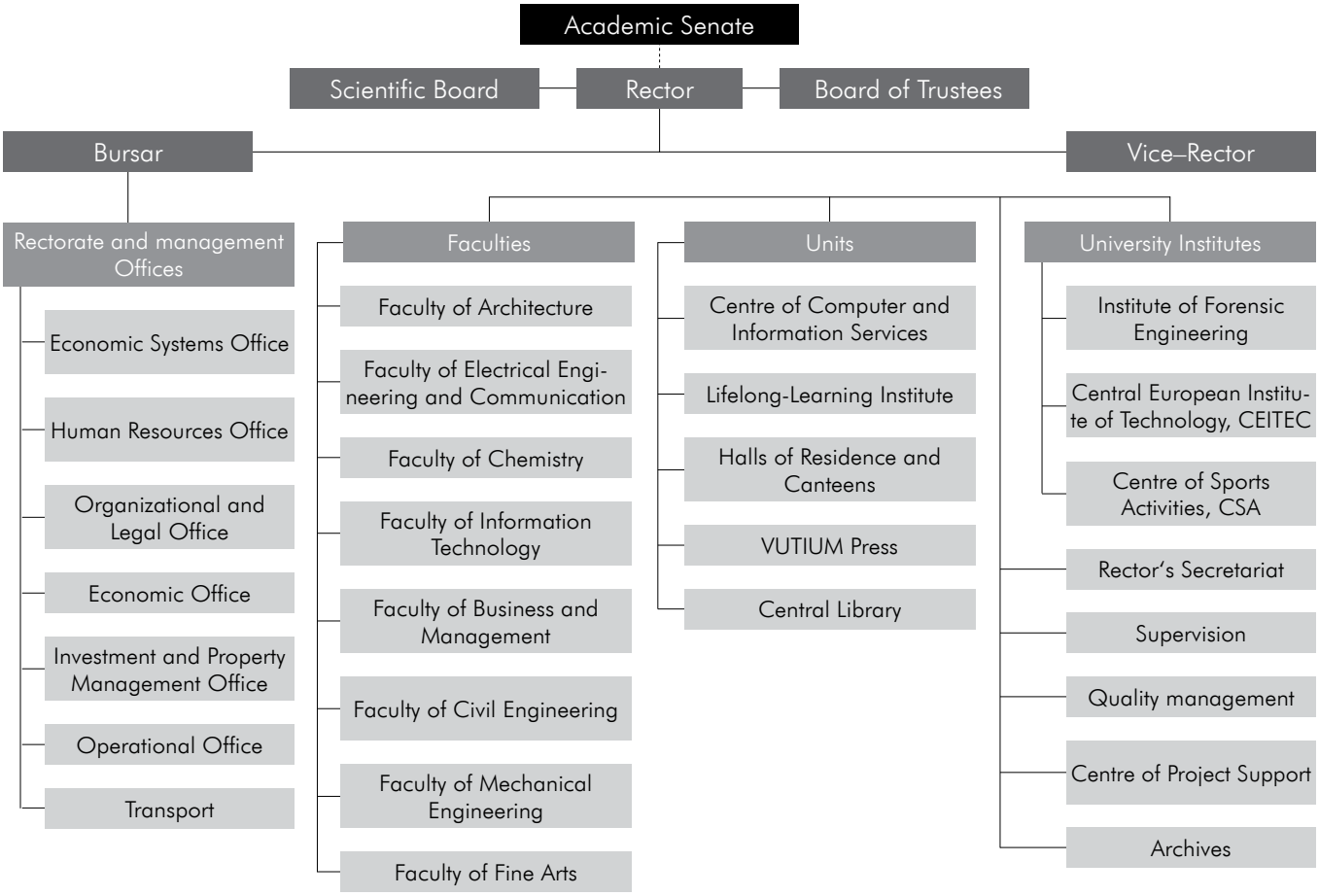
Faculties

BUT Faculty of Architecture, BUT FA, Poříčí 237/5, 639 00 Brno, http://www.fa.vutbr.cz
BUT Faculty of Electrical Engineering and Communication, BUT FEEC, Údolní 244/53, 602 00 Brno, http://www.feec.vutbr.cz
BUT Faculty of Chemistry, BUT FC, Purkyňova 464/118, 612 00 Brno, http://www.fch.vutbr.cz
BUT Faculty of Information Technology, BUT FIT, Božetěchova 1/2, 612 66 Brno, http://www.fit.vutbr.cz
BUT Faculty of Business and Management, BUT FBM, Kolejní 2906/4, 612 00 Brno, http://www.fbm.vutbr.cz
BUT Faculty of Civil Engineering, BUT FCE, Veveří 331/95, 602 00 Brno, http://www.fce.vutbr.cz
BUT Faculty of Mechanical Engineering, BUT FME, Technická 2896/2, 616 69 Brno, http://www.fme.vutbr.cz
BUT Faculty of Fine Arts, BUT FFA, Rybářská 125/13/15, 603 00 Brno, http://www.ffa.vutbr.cz

University Institutes

Central European Institute of Technology, CEITEC, Antonínská 548/1, 601 90 Brno, http://www.ceitec.cz
BUT Centre of Sports Activities, BUT CSA, Technická 2896/2, 616 69 Brno, http://www.cesa.vutbr.cz
Institute of Forensic Engineering, BUT IFE, Údolní 244/53, 602 00 Brno, http://www.usi.vutbr.cz

1.2. BUT Organizational Chart (university structure and its parts)



1.3. BUT Scientific Board, Managerial Board, Academic Senate and other BUT bodies (including changes in 2010) BUT Scientific Board

BUT Scientific Board

name	position, workplace	field of research
prof. Ing. Karel Rais, CSc., MBA	rector of BUT	business and management
Ing. Aleš Bartůněk	general manager, IBM Česká republika, s. r. o.	information technology
prof. Ing. Albert Bradáč, DrSc.	director, BUT Institute of Forensic Engineering	forensic engineering
prof. RNDr. Milan Češka, CSc.	vice-dean, BUT FIT	information technology
prof. Ing. Jarmila Dědková, CSc.	dean of the Faculty of Electrical Engineering and Communication	theoretical electrical engineering
Ing. Jaroslav Doležal, CSc.	Honeywell, s. r. o.	management automation
prof. RNDr. Miroslav Doupovec	dean of the Faculty of Mechanical Engineering	applied mathematics
prof. Ing. Rostislav Drochytka, CSc.	dean, BUT FCE	construction materials engineering
prof. RNDr. Miloslav Druckmüller, CSc.	BUT FME	applied mathematics
Ing. Miloš Filip	director, Prefa Kompozity, a. s.	composite materials
prof. Ing. Jan M. Honzík, CSc.	BUT FEEC	information technology
prof. Ing. Tomáš Hruška, CSc.	dean, BUT FIT	information technology
prof. RNDr. Josef Jančář, CSc.	BUT FC	macromolecular chemistry
doc. Ing. Josef Jettmar, CSc.	vice-rector, Czech Technical University in Prague	geotechnics
prof. Ing. Pavel Jura, CSc.	vice-rector, BUT	cybernetics, automation, and measurement
Ing. Jaroslav Klíma	chairman, board of directors, TESCAN, a. s.	scanning electronic microscopes
Mgr. Rostislav Koryčánek	Director, The Brno House of Arts	architecture
prof. RNDr. Michal Kotoul, DrSc.	vice-rector, BUT	applied mechanics
prof. Ing. Vladimír Kučera, DrSc.	Czech Technical University in Prague, Faculty of Electrical Engineering	technical cybernetics
Ing. arch. Vlasta Loutocká	FORM ARCH	architecture
prof. Ing. Miroslav Ludwig, CSc.	rector, University of Pardubice	organic chemistry
doc. RNDr. Petr Lukáš, CSc.	director, Academy of Sciences, Institute of Materials Physics	materials physics
doc. Ing. Jaroslav Machan, CSc.	manager, ZPESV, Škoda Auto, a.s.	
doc. ing. Lubomír Mikš, CSc.	chairman, board of directors, Qualiform, a.s.	technology of construction
prof. Ing. Drahomír Novák, DrSc.	BUT FCE	structure mechanics, reliability of structures
prof. Ing. Ladislav Omelka, DrSc.	vice-dean, BUT FC	physical chemistry
prof. Ing. Miloslav Pekař, CSc.	BUT FC	
prof. Ing. arch. Petr Pelčák	BUT FA	architecture
prof. PhDr. Jan Sedlák, CSc.	BUT FFA	architecture
prof. RNDr. Eduard Schmidt, CSc.	Masaryk University in Brno, Faculty of Science	solid state physics
prof. Ing. Vladimír Smejkal, CSc.	forensic engineer, Prague	business and management
prof. Ing. Jana Stávková, CSc.	dean, Faculty of Business and Economics, Mendel University in Brno	statistics
prof. Ing. Petr Stehlík, CSc.	BUT FME	process engineering

prof. Ing. arch. Jilji Šindlar, CSc.	BUT FA	architecture
prof. RNDr. Ing. Petr Štěpánek, CSc.	dean, BUT FCE	concrete structures
prof. Ing. Jan Šulc, CSc.	BUT FCE	water structures, hydromechanics
prof. Ing. Ivo Vondrák, CSc.	rector, VŠB-Technical University of Ostrava	information technology
prof. Ing. Radimír Vrba, CSc.	dean, BUT FEEC	electrical and electronic technology
prof. RNDr. Ing. Jan Vrbka, DrSc.	BUT FME	mechanics of solids

BUT MANAGERIAL BOARD

Chairman
- Bc. Roman Onderka, MBA

Vice-Chairman
- Ing. Vladimír Jeřábek, MBA

Members
- Ing. Jiří Bělohlav
- Valentin Girstl
- Mgr. Michal Hašek
- Ing. Miroslav Hošek
- RNDr. Barbora Javorová
- PhDr. Miroslava Kopicová
- Ing. Oldřich Kratochvíl, dr. h. c., MBA
- doc. Ing. Otakar Smolík, CSc., MBA
- Ing. Pavel Suchánek
- Ing. Jiří Škrla
- RNDr. Věra Šťastná
- Ing. Michal Štefl

BUT ACADEMIC SENATE

doc. Dr. Ing. Petr Hanáček, chairperson
doc. ing. Jana Korytárová, Ph.D., vice--chairperson and chairperson of the Chamber of Academics
Bc. Tomáš Krejbich, vice-chairperson and chairperson of the Chamber of Students

CHAMBER OF ACADEMICS

doc. Dr. Ing. Jan Černocký (FIT)
PaedDr. Jitka Dýrová (CSA) – from 04.05.2010
doc. Ing. Eva Gescheidtová, CSc. (FEEC)
doc. Dr. Ing. Petr Hanáček (FIT)
Ing. Helena Hanušová, CSc. (FBM)
MgA. Milan Houser (FFA) – from 09.02.2010
PhDr. Kaliopi Chamonikola, Ph.D. (FFA)
doc. ing. Jana Korytárová, Ph.D. (FCE)
doc. Ing. Aleš Krejčí, CSc. (FCE)
RNDr. Vlasta Krupková, CSc. (FEEC)
doc. MgA. Petr Kvíčala (FFA) – until 31.01.2010
RNDr. Hana Lepková (IFE and other constituent parts – CSA) – until 22.01.2010
doc. Ing. Zdenka Lhotáková, CSc. – from 10.03.2009
Ing. arch. Miloslav Meixner, CSc. – from 10.03.2009
doc. Img. Jiřina Omelková, CSc. (FC)
RNDr. Pavel Popela, Ph.D. (FME)
Ing. Jan Roupec, Ph.D. (FME)
Ing. Stanislav Škapa, Ph.D. (FBM)
prof. RNDr. Milada Vávrová, CSc. (FC)
prof. PhDr. Hana Vykopalová, CSc. (IFE and other constituent parts – CSA)

CHAMBER OF STUDENTS

Bc. Stanislava Dermeková (FCE)
MgA. Petr Dub, DiS. (FFA) – from 21.09.2010
Bc. Patrik Halfar (FIT)
Bc. Tomáš Krejbich (FBM)
Bc. Marián Maslák (FEEC)
Ing. Martin Moos (FC)
Ing. Petra Nováčková (IFE)
Bc. Viktor Odstrčilík (FA) – from 10.03.2009
Ing. Vladimír Panáček (IFE)
BcA. Samuel Paučo (FFA) – until 02.09.2010

BUT AS WORKING COMMITTEES

Legislation Committee:
prof. Ing. Eva Gescheidtová, CSc.
doc. Ing. Aleš Krejčí, CSc.
doc. Ing. Zdeňka Lhotáková, CSc.
doc. Ing. Jiřina Omelková, CSc.
Ing. Jan Roupec, Ph.D. – chairman
Students:
Bc. Marian Maslák
Ing. Vladimír Panáček – from 21.09.2010
BcA. Samuel Paučo – until 02.09.2010

Economic Committee:
doc. Dr. Ing. Jan Černocký
Ing. Helena Hanušová, CSc.
MgA. Milan Houser – from 04.05.2010
PhDr. Kaliopi Chamonikola, Ph.D. – until 03.05.2010
doc. Ing. Jana Korytárová, Ph.D.
RNDr. Vlasta Krupková, CSc.
doc. Ing. Miloslav Meixner, CSc.
RNDr. Pavel Popela, Ph.D. – chairman
prof. RNDr. Milada Vávrová, CSc.
prof. PhDr. Hana Vykopalová, CSc.
Students:
Bc. Patrik Halfar
Ing. Martin Moos

Pedagogic Committee:
Ing. Helena Hanušová, CSc.
RNDr. Vlasta Krupková, CSc. – chairperson
RNDr. Hana Lepková – until 22.01.2010
doc. Ing. Jiřina Omelková, CSc. – from 06.04.2010
prof. PhDr. Hana Vykopalová, CSc.
Students:
Bc. Stanislava Dermeková
Bc. Tomáš Krejbich
BC. Marian Maslák
Ing. Petra Nováčková
Ing. Vladimír Panáček
BcA. Samuel Paučo – until 02.09.2010

CREATIVE ACTIVITY COMMITTEE
prof. Ing. Eva Gescheidtová, CSc.
MgA. Milan Houser – from 04.05.2010
PhDr. Kaliopi Chamonikola, Ph.D. – until 03.05.2010
doc. Ing. Jana Korytárová, Ph.D.
RNDr. Hana Lepková – until 22.01.2010
RNDr. Pavel Popela, Ph.D.
doc. Ing. Stanislav Škapa, Ph.D.
prof. RNDr. Milada Vávrová, CSc. – chairperson
Students:
Bc. Stanislava Dermeková
Bc. Tomáš Kreibich
Ing. Martin Moos
Ing. Petra Nováčková

1.4. BUT as represented in Czech Rectors Conference, Council Of Higher Education Institutions, international and professional organizations

BUT is a member of the Czech Universities Czech Rector Conference – member

BUT REPRESENTATIVES ON THE UNIVERSITY COUNCIL
doc. Ing. Eva Münsterová, CSc. – CHEI presidium member
prof. RNDr. Milada Vávrová, CSc. – CHEI congress member for BUT
Bc. Patrik Halfar – CHEI Chamber of Students
Bc. Tomáš Kreibich – substitute, CHEI Chamber of Students

BUT REPRESENTATIVE IN THE ACADEMIC SENATE OF THE ACADEMY OF SCIENCES OF THE CZECH REPUBLIC
prof. RNDr. Milada Vávrová, CSc.

Table 1.4. BUT Membership in international and professional organizations

organization	country	status
Academy of International Business (AIB)	USA	member
AESOP	France	member from 1995
AKV	CZ	member
American Association for Artificial Intelligence	USA	member
American Biographical Institute	USA	member
American Chemical Society	USA	member
American Mathematical Society (AMS)	USA	member
ASME	USA	member
Association européen pour l'enseignement de l'architecture (AEEA–EAAE)		
Association for Business Ethics	CZ	committee member
Association for Computational Linguistics	USA	member
Association for Iron and Steel Technology (AIST)	USA	member
Association for Project Management	CZ	member
Association for Quality Assessment	CZ	senior assessor of CZ National Quality Prize by EFQM and CAF models
Association of Accountants and Tax Consultants	CZ	member of board
Association of Chemical Companies	CZ	member
Association of European Civil Engineering Faculties (AECEF)	CZ	member
Association of Female Entrepreneurs of the Czech Republic	CZ	vice-president
Association of Libraries of Czech Universities (ALCU)	CZ	member
Center of Excellence Women and Science (CEWS)	Germany	member
CESNET, z. s. p. o.	CZ	member
Confédération Européenne des Centres de Langues		
dans l'Enseignement Supérieur (CERCLES – CASAJC)		
Conference of European Schools for Advanced Engineering Education and Research (CESAER)		member

COST, management committee	Belgium	CZ representative in steering committee
Council of Higher Education Institutions	CZ	member
Czech and Moravian Electrical and Electronic Association	CZ	member
Czech Association of Forensic Experts and Assessors	CZ	chairman
Czech Electrical Engineering Society	CZ	member
Czech Forging Association	CZ	committee member
Czech Foundry Society	CZ	member of executive committee
Czech Logistic Association	CZ	member of presidium
Czech Marketing Association	CZ	member of main committee
Czech Marketing Society	CZ	member
Czech Mathematical Society of the Czech Union of Mathematicians and Physicists	CZ	committee member
Czech Society for Cybernetics and Informatics	CZ	member
Czech Society for Non-Destructive Testing	CZ	president
Czech Society For Research and Processing of Metal Sheets	CZ	committee member
Czech Society of Informatics	CZ	member
Czech Welding Society	CZ	committee member
Czech-Moravian Society for Automation	CZ	committee member
Danube Rectors Conference	Austria	member
DILIA	CZ	collective member
DOCOMOMO International	Spain	member since 1998
EACES	UK	member
ECSB – European Council for Small Business EU	Finland	vice-president for CR
ELIA	the Netherlands	member
EUNIS-CZ	CZ	member
European Association for Architectural Education	Belgium	member since 1995
European Association for Lexicography	FR	member
European Association for Theoretical Computer Science (EATCS)	Belgium	member
European Association of Chemistry and Environment		member
European Foundation for Quality Management (EFQM)	CZ	member
European Institute for Advanced Studies in Management (EIASM)	Belgium	member
European Organisations for Quality (EOQ)	CZ	member
European Photochemistry Association		member
European Society for Engineering Education (SEFI)	UK	member
European University Association (EUA)	Belgium	member
Expert group of European project „Entrepreneurship in higher education, especially within non-business studies“, European commission	EU	CR representative
Fakultätentage für Ingenieurwissenshaften und Informatik (4ING)	Germany	member
Fédération Internationale du Recyclage (F.I.R.)	the Netherlands	board member
Federation of European Heating and Airconditioning Associations (FEHA)	Brussels	member
Food Association (ISEKI)	Austria	member
Gesellschaft für Angewandte Matematik und Mechanik (GAMM)	Germany	member

Gesellschaft für Informatik	Germany	member
Global Business and Technology Association (GBATA)	USA	board member
Global Water Partnership (GWP)		member
Hamburg based European Association for Accident Research and Analysis (EVU)	Germany	Czech national group presidium chairman, main group presidium member
IBS	USA	member
Institute of Electrical and Electronics Engineers (IEEE)	CZ	IT manager of Czechoslovak section, member
International Association for Bridge and Structural Engineering (IABSE)		
International Association for Cross-cultural Psychology	Germany	member
International Council in Building and Construction (CIB)		
International Council of the Aeronautical Sciences (ICAS)	internat. org.	member of programme committee, representative of Czech Association for Mechanics
International Energy Agency, ECBCS Implementation Agreement	France	CR representative in Annex AIVC
International Humic Substances Society		member
International Project Management Association	internat. org.	president of national association
International speech communication association	FR	member
Internationale Gesellschaft für Ingenieurpadagogik	Germany	member
National Register of Advisors	CZ	member
Polish Academy of Sciences, Foundry Committee	Poland	member
PRIME Networking	Belgium	member
Quality Council	CZ	member of board of consultants
Raw Material Policy Board – a consulting body of the Ministry of Industries and Commerce	CZ	member
Royal Society for Chemistry	UK	member
SAP Public Higher Education Institutions Coordination Centre	CZ	member
Science Steering Committee RAAD	EU	member
Scientific Committee for UIA Congress	Italy	member since 2006
Society for Intercultural Training, Education and Research United Kingdom (SIETAR UK)	UK	member
Society for Machine Tools	CZ	member of executive committee
Society of Plastics Engineers (SPE)	USA	member
State Testing Institute Brno	CZ	chairperson of certification committee
The European Business Academy (EIBA)	Belgium	member
The European Marketing Academy (EMAC)		member
The International Group of Ex Libris Users (IGeLU)	internat.org.	member
The International Society of Difference Equations	USA	member
TIES	USA	member
Union of Aleph Users (SUAleph)	CZ and Slovakia	member

Union of Czech Book Sellers and Editors	CZ	member
Union of Librarians Information Providers (SKIP)	CZ	member
Validation Committee for Architectural Education (UNESCO/UIA)	France	member since 1995
Waste Material Management Board – a consulting body of the Ministry of Environment	CZ	member
World Foundrymen Organisation	UK	vice-president

Table 1.5. Accredited degree programmes or parts thereof taught out of town

Name and place of university branch where degree programmes or parts thereof are offered	Names of accredited degree programmes or parts thereof offered at the university branch	Type of degree programmes or parts thereof offered	Names of study fields offered at the university branch	Form of courses offered	Are degree projects presented and defended at the university branch? (yes/no)	Do state exams take place at the university branch? (yes/no)
VOŠ and SPŠ, Studentská 1, 591 00 Žďár nad Sázavou	Mechanical engineering	Bachelor's	Manufacturing technology	Combined	No	No

Table 1.6. Women in university academic bodies

faculties	Deans' Advisory Board	The Academic Senate	Scientific Board
FA	4/11	5/8	4/18
FEEC	2/11	5/19	2/29
FC	2/11	8/13	5/32
FIT	1/17	3/13	2/27
FBM	6/16	9/21	8/27
FCE	0/11	10/40	6/53
FME	4/12	4/36	0/37
			Artistic Board
FFA	4/11	2/11	4/21
	Director's Council		
IFE	4/18	–	2/26
	Rector's Council		
BUT	13/30	3/39	8/29

2 QUALITY AND EXCELLENCY OF ACADEMIC ACTIVITIES



2.1. BUT Academic Senate

In 2010, the BUT Academic Senate (BUT AS) convened at 10 regular and one special sessions. Legislation, economics, and teaching were the main topics of 2010. Regarding the BUT rector's second term in office, at its February meeting, BUT AS discussed and approved a new BUT Scientific Board and made its comments on the rector's appointments of his vice-rectors for the 2010–2014 period. Concerning legislation, standard discussions were held about changes in internal BUT, faculty, and university-institute rules governing the on the activities of university institutes. As every year, 2010 subsidy-distribution rules, approval of BUT 2010 budget, and continuing efforts to contribute to the preparation of BUT for new EU programmes were among major topics. Because of the BUT long-term economic policy, the BUT Academic Senate took decisions concerning a number of property rights (purchase and sale of BUT land). In 2010 BUT AS also discussed and approved BUT 2009 annual reports, BUT 2011–2015 mission statement, and the 2011-mission-statement update. Also in 2010, the BUT AS activities were fully supported by the AS Office. Most of the BUT AS work was carried out by its permanent working committees where all issues were analysed in detail; it is the work in committees that determines the BUT AS quality.

The BUT AS Legislation Committee was in session ten times in 2010 to deal with amendments to BUT and faculty internal regulations and with rules governing the university institutes. Concerning BUT internal regulations, the committee discussed and passed to the AS for approval Amendment 4 to the BUT Management and Accounting Rules (March 2010); amendment to the Rules for the Competitive Hiring Procedure (June to October 2010); amendment of the BUT Study and Examination Rules (September to November 2010); Amendment 5 to the BUT Statutes (September to November 2010); Amendment 2 to the BUT AS Election and Procedural Rules (first reading – December 2010). Next in 2010, the Legislation Committee discussed and passed for approval to the AS the following faculty statutes: Amendment to the BUT FME Statutes (January 2010); amendment to the BUT FBM Scientific Board Procedural Rules (March to June 2010); Amendment 1 to the BUT IFE Statutes (May 2010); amendment to the BUT FBM Statutes (June to December 2010); the BUT FFA internal rules – the BUR FFA Statutes, and the BUT FFA Artistic Board Procedural Rules (June to December 2010); amendment to the BUT FME AS Election and Procedural Rules (September 2010). Last but not least, the Legislation Committee discussed and passed for approval Amendment 6 to Rector's Office Organisational Rules (March 2010), and three admissions directives for the BUT IFE (September to November 2010). In 2010, cooperation with JUDr. Pavlíková from the Rector's Office Administrative Section continued to be beneficial for the work of Legislation Committee.

The BUT AS Economic Committee convened 16 times in 2010. In early 2010, the committee discussed and passed to the BUT AS for approval documents used as a basis for the Rules of Subsidy Allocation in 2010 and the related BUT 2010 Budget. As every year, the Economic Committee discussed in detail and passed to the BUT AS for approval the BUT 2009 Annual Report. In October, the committee had to fulfil an unpleasant duty to discuss an amendment to the BUT budget requiring cuts in late 2010. The Economic Committee further carried out the following activities: When approving the annual report, the committee also investigated related documents; in cooperation with the Legislation Committee the economic aspects were discussed of the regulations to be passed; the impacts on BUT were assessed of the change in the rules of financing from the Ministry of Education, Youth, and Sports; economic calculations were carried out concerning future BUT funding in the time of reforms in cooperation with BUT representatives in the Higher Education Council. A number of outcomes and strategic recommendations were presented at a special meeting of the BUT AS held in June 2010. At this special meeting taking place outside the university, the Economic Committee participated in the preparation of the BUT 2011–2015 Mission Statement and its update for 2011, particularly in economic issues. In late 2010, the committee helped prepare the rules for drawing up the BUT 2011 budget. Success was achieved in transparently including in these rules the conclusions arrived at during discussions on the CEITEC funding held in the spring of 2010 in which some faculties criticised the solution adopted for 2010.

In cooperation with the Creative Activity Committee, the committee carried on the traditional analyses of economic benefits and impacts of projects and creative activities presenting them on a continual basis. It was concerned with the impacts of changes in the evaluation of the RIV results, simulating and forecasting the development of creative activity and financing indicators, asking about the technology transfer and application implementation ROI, participating in the analyses of economic impacts of changes in the rules governing specific research. It discussed Amendment 2 to the BUT 2010 budget adopted on demand of the academic community to harmonize the project-funding inspection by the academic community with the current legislation.

Concerning the preparation of strategic projects, the Economic Committee devoted more attention to construction at BUT (issues related to buildings in the process of construction, resources, ROI); to monitoring and evaluating the economic impacts on BUT and risks of the R&DfI operative programme projects (effects of co-financing, eligible and non-eligible costs, their return over time, sustainability of projects and identification of those participating in it). The Economic Committee along with the BUT AS were active in dealing with the

problem of the BUT Faculty of Electrical Engineering and Communication with the faculty academic senate passed a resolution to postpone the construction of the T12 and T14 buildings intended for the faculty.
In the year 2010, in which preparations were under way of the R&DfI projects (CEITEC), the Economic Committee discussed and passed to the BUT AS for approval 14 cases concerning the purchases of land on the Pod Palackého vrchem campus needed for the preparation of projects and BUT development (further buildings in the Technická Street), free acquisition of land for the needs of BUT, exchange of a part of the land, and granting an easement. All these documents were presented as required by the 2010 updated version of the BUT Mission Statement, and the current version of the Programme to Complete the BUT Infrastructure in 2009–2015. The Economic Committee then discussed the taking out of a loan to buy land and real estate on the PPV campus for strategic reasons (mainly for building CEITEC).
Among other important matters discussed by the committee was the Erasmus Residence covered widely by the media where also suggestions from the academic community were heard by the BUT AS.
The Economic Committee was also engaged in a discussion concerning the introduction of a Full-Cost methodology including discussions of the possibilities of removing multiple overhead and funding targeted to individual academics (see TOP 10 researchers and teachers, cross-faculty optional courses in cooperation with the Pedagogic Committee, support for cross--faculty specific-research projects).
The Pedagogic Committee of the BUT AS was mostly concerned in 2010 with problems related to the BUT Study and Examination Rules and the parts thereof focusing on the number of resits continuing to prepare a methodology for calculating teachers' workloads at faculties. The student members of the committee monitor matters concerning doctoral programmes on a continual basis preparing an enquiry about the most popular teacher.
The Creative Activity Committee of the BUT AS held eight meetings in 2010. It was mostly concerned with problems in submitting results to RIV, that is mostly, with detecting the most frequent formal submitting errors. It was decided that, in cooperation with the Computer Information and Services Centre, abridged rules will be drawn up and disseminated to faculties. Next the committee discussed the TOP evaluation, particularly concerning products, here the debate mostly focussed on setting new criteria for including products as outcomes of creative activity of academics. The committee members agree that such products should remain the property of BUT, unless they find applications within a few years, they should no longer be included in the TOP evaluation. These problems have not yet been completely resolved and will be re-discussed next year. In cooperation with the Economic Committee, the Creative Activity Committee also prepared for a new version of methodology for assessing R&D in the Czech Republic and with the related funding. At the end of 2010, intensive debates were held between the committee and the BUT vice-rector for creative development concerning the financing of research in 2010, particularly the position of cross-faculty projects. Based on previous discussions, the BUT AS adopted a resolution on the rules for the BUT 2010 budget concerning specific research; next resolution concerned the specific-research project-submission deadline due to the failure to specify the funding available. At several meetings the committee also discussed the possibility of recognising the IFE experts' opinions as results eligible for inclusion in RIV. The presidium of the Council of Higher Education Institutions again approved the chairwoman of the AS BUT Creative Activity Committee as the CHEI delegate for the Academic Senate of the Academy of Sciences of the Czech Republic. At its extraordinary meeting held at Vilanec in June 2010, the committees met separately for two days to discuss the preparation of the BUT 2011–2015 Mission Statement and its 2011 update. Also at the BUT AS regular meeting the BUT Mission Statement was discussed focusing on economic and creative-activity matters as well as on the new legislation put forward.
Through its representatives in the Council of Higher Education Institutions, the BUT Academic Senate kept a close watch on the discussion about the subject-matter of the new higher-education law required by the university reform to be. The BUT AS representatives in the Council of Higher Education Institutions kept the BUT AS informed of all the CHEI actions in which they participated. The BUT AS continued to watch the results of the investigations carried out at the West Bohemian University in Pilsen receiving detailed information from RNDr. Krupková, chairwoman of the CHEI Committee for Ethics in Research and Teaching.
The BUT representatives in the Council of Higher Education Institutions participated in detailed economic analyses making comments on the input economic documents on changes in university financing, which are being prepared.
The Student Chamber of the BUT Academic Senate helped students in difficult situation and unstable academic environment. This included the finishing of rules for difficult-situation scholarships concerning eligibility and method of payment. Next the chamber was concerned with problems related to the amount of the doctoral scholarship presenting them at the BUT AS special meeting. The BUT AS Student Chamber members representing it in the Supervisory Board of the Accommodation and Catering Services helped efficiently improve student dormitory accommodation and meals in the canteens. Through the Pedagogic Committee, the BUT AS Student Chamber monitors the study in courses where this is possible. An amendment was approved to the BUT Study and Examination Rules for the faculties to determine their own numbers of resits. In the Council of Higher Education Institutions, the BUT AS Student Chamber representatives called for

increasing the doctoral and accommodation scholarships, removing the student-status deadline of 26 years through an amendment to Act no. 111/1998 Coll. concerning universities. The Student Chamber helped launch a new student.vutbr.cz portal. In the academic year 2010/2011, the Student Chamber wrote and published a manual for first-year students planning to make it a tradition.

2.2. Numbers of accredited degree programmes

In 2010 BUT offered 74 full-time and combined degree programmes including 58 active ones with student actually registered. During the year new doctoral programmes were accredited: architecture a town-planning, electrical engineering and communication with specialisations including biomedical electronics and biocybernetics, electronics and communication technology, physical electronics and nanotechnology, microelectronics and technology, teleinformatics, theoretical electrical engineering. Next a new follow-up Master's programme taught in English was launched: industrial engineering as well as new doctoral programmes, architecture and town-planning with a town-planning specialization, electrical engineering and communication with specialisations including biomedical electronics and biocybernetics, electronics and communication, physical electronics and nanotechnology, microelectronics and technology, teleinformatics, theoretical electrical engineering. The accreditation of the economics and management Bachelor's programme was extended to the corporate economy and accounting and accounting and taxes specialisations and the company accounting and financial management specialisation was added to the economics and management follow-up Master's programme.

The courses offered cover a wide spectrum of classic engineering, economic, and natural science fields, a number of architectural and artistic fields as well as interdisciplinary programmes combining engineering, natural science, economics, and medicine. Table 2.2_1 lists the accredited programmes, in Table. 2.2_1 the active accredited programmes are sorted by faculty.

Table 2.2_1 Active accredited degree programmes

groups of degree programmes	degree programmes						
	Bachelor's		Master's		follow-up Master's		Doctoral
	FT	C	FT	C	FT	C	
natural sciences	0	0	0	0	0	0	2
technical sciences	13	8	2	1	13	8	17
economics	2	2	0	0	1	1	1
culture and art sciences	1	0	0	0	1	0	1
total	16	10	2	1	15	9	21

Table 2.2_1a_1 Active accredited degree programmes by faculty

faculties	Bachelor's	follow-up Master's	Master's	Doctoral	total progr.
FA	1	1	0	1	3
FCE	4	3	1	2	10
FFA	1	1	0	1	3
FC	3	4	0	5	12
FEEC	2	2	0	1	5
FIT	1	1	0	2	4
FBM	2	2	0	1	5
FME	2	4	1	6	13
IFE	0	2	0	1	3
total	16	20	2	20	58

2.3. Courses taught in foreign languages, joint programmes (joint and double degree), BUT degree programmes accredited in a foreign language.

Most of the courses are taught both in Czech and English with one programme taught in German. Table 2.3_1. lists the active programmes accredited in foreign languages for which students have signed up. Supported is also preparation for the accreditation of degree programmes offered jointly with foreign universities. At present there are three full-fledged joint and double degree programmes offered (Tables 2.3_2, 2.3_3), with more being prepared. This is a continual process further worked on by the faculties.

Table 2.3_1 Degree programmes at BUT taught in English

groups of degree programmes	degree programmes							total
	Bachelor's		Master's		follow-up Master's		Doctoral	
	FT	C	FT	C	FT	C		
natural sciences	0	0	0	0	0	0	4	4
technical sciences	3	0	0	0	3	0	6	12
economics	0	0	0	0	1	0	2	3
culture and art sciences	0	0	0	0	0	0	0	0
total	3	0	0	0	4	0	12	19

Table 2.3_2 Joint/double degree programmes – FME

Programme title	1) production systems 2) industrial engineering
Coordinator	1) doc. Ing. Petr Blecha, Ph.D. 2) prof. Ing. Miroslav Píška, CSc.
Partner organizations (Project consortium)	1) Technische Universität Chemnitz (Chemnitz, Germany) 2) Art et Métiers ParisTech (Cluny, France)
Adjoined organisations	
Beginning	1 / 2009
	2 / 2010
Programme category	Double Degree
Length of study	2 years
Programme type	follow-up Master's
Number of credits	120
Programme organisation, admissions, graduation	1) production systems – one-year study in Czech, one-year study in German 2) industrial engineering – one-year study in Czech and one-year study in French. A Bachelor's programme student can be admitted if he or she has completed the final year of the Bachelor's programme at a French university.
What diploma and diploma appendix are issued?	After completing the programme, students receive degrees at both universities. Diploma and diploma supplement are received during graduation ceremony or in person.
Student mobility type	Within an Erasmus programme or the FME 25/7 development programme
How cooperation with EU countries is implemented, is a contract signed, what is covered by the contract?	Cooperation according to bilateral agreements signed as a result of intensive personal contacts.

Table 2.3_3 Joint/double degree programmes – FME

Programme title	Economics and Management
Coordinator	doc. Ing. Stanislav Škapa, Ph.D.
Partner organizations (Project consortium)	Nottingham Trent University (GB) Karol Adamiecki Economic University, Katowice, Poland Brno University of Technology (CZ)
Adjoined organisations	
Beginning	Academic year 2007/2008
Programme category	Joint degree
Length of study	2 years
Programme type	follow-up Master's
Number of credits	120
Programme organisation, admissions, graduation	Full-time study, the 1st and 2nd semesters are studied at the BUT Faculty of Business and Management, the 3rd semester at Nottingham Trent University, 4th semester is devoted to work on the degree project (in English) at a Czech or British company. Conditions of admission: 1) completed similar Bachelor's programme 2) passing a written entrance exam (aptitude and English test) Completion of study: 1) achieving 120 credits at the BUT Faculty of Business and Management, passing a state exam (consisting of degree project presentation and an oral exam in the theoretical background – both parts in English) 2) meeting the conditions of Nottingham Trent University
What diploma and diploma appendix are issued?	1) The „inženýr" degree diploma along with the supplement is issued by BUT 2) The Master of Science degree diploma is issued by Nottingham Trent University signed by the rectors of all three participating universities.
Student mobility type	One-semester study stay
How cooperation with EU countries is implemented, is a contract signed, what is covered by the contract?	Consortial agreement between Nottingham Trent University, BUT, and Karol Adamiecki Economic University

2.4. Accredited degree programmes jointly offered by BUT and specialised institutions of higher-education

At present there is no degree programme at BUT offered jointly with a specialised institution of higher-education.

2.5. Lifelong learning courses

Table 2.5. Lifelong learning courses offered by BUT

programme groups	profession-oriented courses			special-interest courses			U3V	total
	up to 15 hr	up to 100 hr	more	up to 15 hr	up to 100 hr	more		
natural sciences							2	2
technical sciences	13	1					51	65

agriculture, forestry, veterinary								
medicine, pharmacy							6	6
social sciences and services			12				1	13
economics							2	2
law, public administration								
pedagogy, teaching, and social welfare			1				1	
psychology fields								
culture and art sciences							7	7
total	13	1	13				69	96

U3A – University of the 3rd Age

Table 2.6. Lifelong-Learning Student Numbers

programme groups	profession-oriented courses			special-interest courses			U3V	total
	up to 15 hr	up to 100 hr	more	up to 15 hr	up to 100 hr	more		
natural sciences							35	35
technical sciences	108	3					828	939
agriculture, forestry, veterinary								
medicine, pharmacy							128	128
social sciences and services			135				100	235
economics							16	16
law, public administration								
pedagogy, teaching, and social welfare			29				701	730
psychology fields								
culture and art sciences								
total	108	3	164				1 808	2 083

U3A – University of the 3rd Age

2.7. Interest in studying at BUT

Long term statistics show that the interest in studying at BUT is constantly growing. The number of applications submitted in 2010 reached almost twenty-one thousand with the students actually enrolled being by 500 more than in the autumn of 2008. The percentage of the students actually enrolled out of the total of those admitted is not decreasing. This means that, of all the applications submitted to different universities, the candidates give those submitted to our university high priority. Table 2.7 indicates the interest of candidates in individual degree programme groups.

Table 2.7. BUT Study Candidates

groups of degree programmes	number				
	applications submitted	applications registered	candidates eligible	candidates admitted	candidates enrolled
natural sciences	16	15	15	15	14
technical sciences	15 230	12 897	11 428	11 047	8 729
economics	5 095	4 151	2 077	1 966	1 466
culture and art sciences	537	526	102	102	101
total	20 878	17 589	13 622	13 130	10 310

2.8. Students In Accredited Degree Programmes

In recent years, there has been a moderate, steady increase in enrolled student numbers. Written admission tests are still in place at all the faculties to maintain the quality of the candidates admitted. Table 2.8 shows the student numbers on 31st October 2010 arranged by degree-programme groups and levels of tertiary education. For several years, no students have been admitted to the non-follow--up programmes, their numbers being very small with all the students being close to graduation. Table 2.8_1 lists total student numbers including suspended studies by programme groups, Table 2.8_2 by programme types, Table 2.8_3 by faculties and programme type, Table 2.8_4 by study type and form, Table 2.8_5 by degree programmes. Table 2.8_6 shows numbers of international students.

Table 2.8. Student numbers in accredited programmes on 31st October 2010

groups of degree programmes	student numbers in degree programmes								total
	Bachelor's		Master's		follow-up Master's		Doctoral		
	FT	C	FT	C	FT	C	FT	C	
natural sciences	0	0	0	0	0	0	38	23	61
technical sciences	11 253	1 192	4	20	5 312	507	1 058	831	20 177
economics	1 592	76	0	0	894	372	54	72	3 060
culture and art sciences	175	0	0	0	96	0	17	2	290
total	13 020	1 268	4	20	6 302	879	1 167	928	23 588

Table 2.8_1 Student numbers including suspended studies by programme groups

programme groups	master group code	Bachelor's	Master's	follow-up Master's	Doctoral	total
technical sciences	23 to 39	12 445	24	5 819	1 889	20 177
natural sciences	14	0	0	0	61	61
economics	62	1 668	0	1 266	126	3 060
culture and art sciences	82	175	0	96	19	290
total		14 288	24	7 181	2 095	23 588

Table 2.8_2 Student numbers by programme type

programme type	programme type	full-time	combined	total
Bc.	Bachelor's	13 020	1 268	14 288
Mgr.	Master's	4	20	24
Mgr. nav.	follow-up Master's	6 302	879	7 181
Ph.D.	Doctoral	1 167	928	2 095
total		20 493	3 095	23 588

Table 2.8_3 Student numbers by faculties and programme type

faculties	Bachelor's	Master's	follow-up Master's	Doctoral	total
FA	430	0	219	78	727
FCE	4 670	20	1 598	392	6 680
FFA	175	0	96	19	290
FC	455	0	279	179	913
FEEC	2 318	0	1 285	442	4 045
FIT	1 804	0	824	216	2 844
FBM	1 668	0	1 266	126	3 060
FME	2 768	4	1 291	509	4 572
IFE	0	0	323	134	457
total	14 288	24	7 181	2 095	23 588

Table 2.8_4 Student numbers by faculties, programme type, and form

faculties	Bachelor's		Master's		follow-up Master's		Doctoral		total
	C	FT	C	FT	C	FT	C	FT	
FA	0	430	0	0	0	219	47	31	727
FCE	528	4 142	20	0	80	1 518	215	177	6 680
FFA	0	175	0	0	0	96	2	17	290
FEEC	288	2 030	0	0	181	1 104	141	301	4 045
FC	83	372	0	0	64	215	64	115	913
FIT	0	1 804	0	0	0	824	71	145	2 844
FBM	76	1 592	0	0	372	894	72	54	3 060
FME	293	2 475	0	4	182	1 109	243	266	4 572
IFE	0	0	0	0	0	323	73	61	457
total	1 268	13 020	20	4	879	6 302	928	1 167	23 588

Table 2.8_5 Student numbers by faculties and degree programmes

fac.	prog. code	title	men	women	FT	C	total
FA	N3501	Architecture and town-planning	105	114	219	0	219
FA	B3501	Architecture and town-planning	180	250	430	0	430
FA	P3501	Architecture and town-planning	46	32	31	47	78
FCE	B3607	Civil engineering	2 980	1 213	3 738	455	4 193
FCE	B3609	Civil engineering	4	2	6	0	6
FCE	N3504	Architecture and development of settlements	28	48	76	0	76
FCE	N3607	Civil engineering	993	453	1 366	80	1 446
FCE	B3503	Architecture of building structures	79	127	206	0	206
FCE	M3607	Civil engineering	18	2	0	20	20
FCE	B3646	Geodesy and cartography	150	115	192	73	265
FCE	N3646	Geodesy and cartography	42	34	76	0	76
FCE	P3646	Geodesy and cartography	14	8	12	10	22
FCE	P3917	Forensic engineering	0	0	0	0	0
FCE	P3607	Civil engineering	263	107	165	205	370
FFA	N8206	Fine arts	37	59	96	0	96
FFA	B8206	Fine arts	84	91	175	0	175
FFA	P8206	Fine arts	10	9	17	2	19
FC	P2805	Chemistry and Environment Protection	25	29	29	25	54
FC	P1404	Physical chemistry	12	28	26	14	40
FC	N2806	Consumer chemistry	15	35	44	6	50
FC	B2825	Protection of population	19	15	15	19	34
FC	P1405	Macromolecular chemistry	14	7	12	9	21
FC	N2820	Chemistry, technology and properties of materials	26	20	40	6	46
FC	N2901	Chemistry and technology of food	13	87	74	26	100
FC	B2801	Chemistry and chemical technology	137	133	234	36	270
FC	N2805	Chemistry and technology of environment protection	24	59	57	26	83
FC	P2901	Chemistry and technology of food	4	29	31	2	33
FC	B2901	Chemistry and technology of food	47	104	123	28	151
FC	P2820	Chemistry, technology and properties of materials	19	12	17	14	31
FEEC	N3952	Biomedical engineering and bioinformatics	28	15	43	0	43
FEEC	B3930	Biomedical technology and bioinformatics	155	128	283	0	283
FEEC	P2613	Electrical engineering and communication technology	409	33	301	141	442
FEEC	B2643	Electrical engineering, electronics, communication, and control technology	1 988	47	1 747	288	2 035
FEEC	N2643	Electrical engineering, electronics, communication, and control technology	1 194	48	1 061	181	1 242
FIT	P2651	Computing technology and informatics	186	9	145	50	195
FIT	B2646	Information technology	1 702	102	1 804	0	1 804
FIT	P2646	Information technology	19	2	0	21	21

FIT	N2646	Information technology	794	30	824	0	824
FBM	B6209	System engineering and informatics	435	85	503	17	520
FBM	N6208	Economics and management	572	549	749	372	1 121
FBM	B6208	Economics and management	573	575	1 089	59	1 148
FBM	P6208	Economics and management	65	61	54	72	126
FBM	N6209	System engineering and informatics	115	30	145	0	145
FME	N2344	Production systems	8	0	8	0	8
FME	P2303	Manufacturing technology	41	11	23	29	52
FME	B3901	Applied sciences in engineering	314	52	366	0	366
FME	N3901	Applied sciences in engineering	195	46	222	19	241
FME	M2301	Mechanical engineering	4	0	4	0	4
FME	P3917	Forensic engineering	0	0	0	0	0
FME	P3913	Applications of natural sciences	21	6	11	16	27
FME	P3920	Metrology and testing	22	9	5	26	31
FME	B2341	Mechanical engineering	2 267	135	2 109	293	2 402
FME	P3910	Physical and materials engineering	66	10	47	29	76
FME	P3901	Applied sciences in engineering	75	4	45	34	79
FME	N2301	Mechanical engineering	979	57	873	163	1 036
FME	N2345	Industrial Engineering	4	2	6	0	6
FME	P2302	Machinery and devices	229	15	135	109	244
IFE	N3950	Risk engineering	18	25	43	0	43
IFE	N3917	Forensic engineering	167	113	280	0	280
IFE	P3917	Forensic engineering	97	37	61	73	134
total			18 130	5 458	20 493	3 095	23 588

Table 2.8_6 International student numbers

programme type		international students
Bc.	Bachelor's	1 526
Mgr.	Master's	1
Mgr. nav.	follow-up Master's	881
Ph.D.	Doctoral	175
total		2 583

2.9. Graduates

In the last two years, the number of BUT graduates has been increasing slightly. With the last non-follow-up Master's degree programme students finishing gradually their studies, the number of students graduating from follow-up Master's programmes is increasing.

Arranged by programmes and degrees of tertiary education, the numbers are shown in Table 2.9; Table 2.9_1 lists 2010 graduates by faculty and programme while Table 2.9_2 only by faculty. Table 2.9_3 lists details of doctoral graduates including their supervisors and the titles of their theses. Table 2.9_4 shows graduates receiving awards in 2010.

Table 2.9. Graduates from BUT accredited degree programmes from 1st January to 31st December 2010

groups of degree programmes graduates	graduate numbers in degree programmes								total
	Bachelor's		Master's		follow-up Master's		Doctoral		
	P	K	P	K	P	K	P	K	
natural sciences	0	0	0	0	0	0	3	11	14
technical sciences	2 157	106	12	13	1 783	106	18	121	4 316
economics	335	51	0	0	296	136	0	6	824
culture and art sciences	42	0	0	0	48	0	3	0	93
total	2 534	157	12	13	2 127	242	24	138	5 247

Table 2.9_1 Graduates from accredited degree programmes from 1st January to 31st December 2010 by faculty and programme

fac.	programme	memn	women	incl. internat. students	total
FA	B3501	38	51	10	89
FA	N3501	51	53	16	104
FA	P3501	7	7	0	14
FCE	B3503	16	27	0	43
FCE	B3607	453	201	27	654
FCE	B3609	7	1	0	8
FCE	B3646	20	17	4	37
FCE	M3607	8	5	0	13
FCE	N3607	253	133	23	386
FCE	N3646	27	25	12	52
FCE	P3607	19	5	0	24
FCE	P3646	1	1	0	2
FFA	B8206	16	26	3	42
FFA	N8206	20	28	3	48
FFA	P8206	1	2	0	3
FC	B2801	28	47	2	75
FC	B2825	14	16	1	30
FC	B2901	6	18	1	24
FC	N2805	7	11	0	18
FC	N2806	3	15	1	18
FC	N2820	14	5	2	19
FC	N2901	3	49	8	52
FC	P1404	5	4	1	9
FC	P1405	4	1	0	5
FC	P2805	1	5	0	6
FC	P2820	1	0	0	1
FC	P2901	0	2	0	2

FEEC	B2643	411	10	38	421
FEEC	B3930	27	15	2	42
FEEC	N2643	476	11	48	487
FEEC	P2613	16	1	2	17
FIT	B2646	338	7	82	345
FIT	N2646	207	8	33	215
FIT	P2646	8	1	0	9
FIT	P2651	4	0	0	4
FBM	B6208	76	157	10	233
FBM	B6209	128	25	17	153
FBM	N6208	223	209	19	432
FBM	P6208	4	2	0	6
FME	B2341	411	21	18	432
FME	B3901	49	14	9	63
FME	M2301	10	2	0	12
FME	N2301	355	21	17	376
FME	N2345	3	0	3	3
FME	N3901	71	28	9	99
FME	P2302	17	2	1	19
FME	P2303	3	1	0	4
FME	P3901	9	0	0	9
FME	P3910	14	3	0	17
FME	P3913	4	1	0	5
FME	P3920	3	1	0	4
IFE	N3917	33	27	3	60
IFE	P3917	2	0	0	2
total		3 925	1 322	425	5 247

Table 2.9_2 Graduates from accredited degree programmes from 1st January to 31st December 2010 by faculty

faculties	graduates in degree programmes				total graduates
	Bachelor's	Master's	Mgr. navazující	Doctoral	
FA	89	0	104	14	207
FCE	742	13	438	26	1 219
FFA	42	0	48	3	93
FC	129	0	107	23	259
FEEC	463	0	487	17	967
FIT	345	0	215	13	573
FBM	386	0	432	6	824
FME	495	12	478	58	1 043
IFE	0	0	60	2	62
total	2 691	25	2 369	162	5 247

Table 2.9_3 BUT doctoral graduates in 2010

fac.	name	theme and supervisor
FA	Ing. Peter Bali	Recreation opportunities of the public space of the large housing estates in Slovakia. Supervisor: doc. Ing. arch. Vladimíra Šilhánková, Ph.D.
FA	Ing. arch. Jitka Bidlová	Barrier-layer photocells in architecture. Supervisor: doc. Ing. arch. Hana Urbášková, Ph.D.
FA	Ing. arch. Zuzana Jacková	Architectural and monument values of factory-owners' villas as applied to the residences of the founders of sugar factories in Moravia and Silesia. Supervisor: prof. Ing. arch. Helena Zemánková, CSc.
FA	Ing. arch. Katarína Luciaková	Architecture and the blind. Supervisor: prof. Ing. arch. Jiljí Šindlar, CSc.
FA	Mgr. Ing. arch. Anežka Sedláková	Housing in the abandoned buildings of the Brno former textile factories. Supervisor: prof. Ing. arch. Helena Zemánková, CSc.
FA	Ing. arch. Radek Suchánek	Relationship between the city and the landscape. Supervisor: Ing. arch. Hana Ryšavá, CSc.
FA	Ing. arch. Lukáš Ležatka	The importance and role of artificial watercourses in the modern city. Supervisor: doc. Ing. Zdenka Lhotáková, CSc.
FA	Ing. arch. Tomáš Pavlovský	Water in an urbanized environment. The Svratka flume in Brno. Supervisor: doc. Ing. Zdenka Lhotáková, CSc.
FA	Ing. arch. Jan Velek	Forms of student housing and accommodation and their influence on a particular locality. Supervisor: doc. Ing. arch. Dagmar Glosová, CSc.
FA	Ing. arch. Šárka Remy-Zéphir	Industrial and military architecture of port towns, comparing conversions of the industrial and military heritage. Supervisor: prof. Ing. arch. Helena Zemánková, CSc.
FA	Ing. arch. Soňa Velková	Forms of unprovided-for children care. Supervisor: doc. Ing. arch. Dagmar Glosová, CSc.
FA	Ing. Jana Vaďurová	Public spaces as indicators of the quality of life in a city. Supervisor: doc. Ing. arch. Vladimíra Šilhánková, Ph.D.
FA	akad. arch. Jiří Svoboda	Architect Jiří Voženílek in Zlín. Supervisor: prof. Ing. arch. Helena Zemánková, CSc.
FA	Ing. arch. Jan Foretník	Architecture, geometry and computing technology. Supervisor: Ing. arch. Hana Ryšavá, CSc.
FCE	Ing. Miroslava Čechová	The traditional and present timbered buildings. Supervisor: doc. Ing. arch. Jarmila Ledinská, CSc.
FCE	Ing. Tatiana Mifková	New methods of waste water drainage from decentralized areas. Supervisor: doc. Ing. Petr Hlavínek, CSc.
FCE	Ing. Jiří Buček	Solution to the interaction between building structures and their subsoil based on the theory of elastic semi-space and normed subsoil models. Supervisor: doc. Ing. Ivan Němec, CSc.
FCE	Ing. Vojtěch Zubíček	Modelling the microclimate generated by the air-conditioning of shopping malls. Supervisor: Ing. Günter Gebauer, CSc.
FCE	Ing. Petr Vymlátil	Comprehensive dynamic analysis of the action of rail vehicles on the railway structures. Supervisor: doc. Ing. Vlastislav Salajka, CSc.
FCE	RNDr. Ivan Poul	Influence of the mineralogical composition on the mechanical behaviour of soils. Supervisor: doc. Ing. Kamila Weiglová, CSc.
FCE	Ing. Jiří Strnad	Impact of additional pre-stress on brick vault reforming and methods of its measuring. Supervisor: doc. Ing. Ivailo Terzijski, CSc.
FCE	Ing. Jacek Wendrinski	Nonlinear and plastic analysis of reinforced concrete structures and details. Supervisor: doc. Ing. Jaroslav Navrátil, CSc.
FCE	Ing. Lukáš Daněk	Influence of the environment on the foundations with respect to the solution of temperature distribution in the subsoil of buildings without cellar. Supervisor: Ing. Věra Maceková, CSc.
FCE	Ing. Zuzana Mastná	Microclimate of low-energy houses and TEB systems. Supervisor: Ing. Karel Čupr, CSc.
FCE	Ing. Richard Svoboda	Determining the mechanical properties of the elastic loading area of sleepers. Supervisor: doc. Ing. Otto Plášek, Ph.D.
FCE	Ing. Vladimír Sedlák	Modelling the ventilated airspace of double-shell roofs. Supervisor: Ing. Libor Matějka, CSc., Ph.D.

FCE	Ing. Gabriela Michalcová	Research and development of new progressive anti-corrosion agents using waste materials. Supervisor: prof. Ing. Rostislav Drochytka, CSc.
FCE	Ing. Pavel Vyroubal	Substance structure of concrete samples and its influence on acoustic emission. Supervisor: doc. Ing. Marta Kořenská, CSc.
FCE	Ing. Pavel Kaláb	Suspension roofs from pre-stressed concrete. Supervisor: prof. Ing. Jiří Stráský, DSc.
FCE	Ing. Jan Barnat	Analysis of the behaviour of steel capsule anchors. Supervisor: doc. Ing. Miroslav Bajer, CSc.
FCE	Ing. Ludmila Vodičková	Methods for enhancing the cleaning power of root-zone wastewater treatment plants with horizontal subsurface water flow. Supervisor: prof. Ing. Jan Šálek, CSc.
FCE	Ing. Dominik Gazdič	Research and development of anhydrite-based sulphate binders. Supervisor: prof. Ing. Marcela Fridrichová, CSc.
FCE	Ing. Jiří Fišer	Designing mixtures for cold-recycling of roads and determining their functional properties. Supervisor: doc. Dr. Ing. Michal Varaus
FCE	Ing. Dalibor Plšek	Optimizing the design of glassed in facade systems of administrative buildings. Supervisor: doc. Ing. Jitka Mohelníková, Ph.D.
FCE	Ing. Jan Ručka	Risk analysis of water distribution systems. Supervisor: doc. Ing. Ladislav Tuhovčák, CSc.
FCE	Mgr. Tomáš Apeltauer	Generic properties of traffic flow models. Supervisor: doc. RNDr. Jiří Macur, CSc.
FCE	MUDr. Milan Markovič	Assessment of security-related impacts of some electronic devices on the human organism. Supervisor: prof. RNDr. Zdeněk Chobola, CSc.
FCE	MSCE Pavel Dohnálek	Development of barrier liquid-proof and gas-proof external coatings using waste materials. Supervisor: prof. Ing. Rostislav Drochytka, CSc.
FCE	Ing. Petr Kalvoda	Sub-pixel detection of shifts for determining the volume changes in building materials using a digital microscope. Supervisor: doc. Ing. Vlastimil Hanzl, CSc.
FCE	Ing. Jitka Hotovcová	Geodatabases and their use in geodynamic evaluation and interpretation of movement tendencies in the Central European area. Supervisor: doc. RNDr. Lubomil Pospíšil, CSc.
FFA	Ing. Jana Daňková	Environmental concept in the public space. Supervisor: doc. PhDr. Petr Spielmann, dr. h. c.
FFA	MgA. Václav Kočí	Picture and architecture/Typology of painters' interventions in architecture. Supervisor: doc. MgA. Petr Kvíčala
FFA	Mgr. Dora Viceníková	Marketing strategies of theatre institutions. Supervisor: prof. Ing. Karel Rais, CSc., MBA
FEEC	Ing. Lucie Dordová	Method of determining the characteristics of atmospheric transmission environment in the optical part of the spectrum. Supervisor: prof. Ing. Otakar Wilfert, CSc.
FEEC	Ing. Michal Kováč	Analysing the possibilities of simulating and implementing auto-synchronous subsystems in VLSI circuits. Supervisor: doc. Ing. Jaromír Kolouch, CSc.
FEEC	Ing. Michal Kubíček	Modelling and implementing subsystems of the communication chain in FPGSA circuits. Supervisor: prof. Dr. Ing. Zdeněk Kolka
FEEC	Ing. Jaroslav Rumánek	New methods of chain encrypting for satellite communication. Supervisor: doc. Ing. Jiří Šebesta, Ph.D.
FEEC	Ing. Vít Svoboda	Study of the electrochemical insertion of cations into oxides of transition metals. Supervisor: prof. Ing. Jiří Kazelle, CSc.
FEEC	Ing. Josef Urban	Signal dynamics reduction in systems with orthogonal frequency multiplexer. Supervisor: doc. Ing. Roman Maršálek, Ph.D.
FEEC	Ing. Rostislav Vídenka	Some questions of pre-certification EMC tests. Supervisor: Ing. Jiří Dřínovský, Ph.D.
FEEC	Ing. Erik Odvářka	Motor-generator with axial flow for hybrid bus. Supervisor: doc. Ing. Čestmír Ondrůšek, CSc.
FEEC	Ing. Tomáš Ondrák	Micropump for the purposes of medicament treatment. Supervisor: doc. Ing. Josef Koláčný, CSc.
FEEC	Ing. Jan Beran	Performance analysis in IP industrial communication networks. Supervisor: prof. Ing. František Zezulka, CSc.
FEEC	Ing. Michal Hadinec	Optimizing the homogeneity of the basic magnetic field in MR tomography. Supervisor: prof. Ing. Karel Bartušek, DrSc.
FEEC	Ing. Jan Höll	High-moment motors for independent traction drive in handling equipment. Supervisor: doc. Dr. Ing. Hana Kuchyňková

FEEC	Ing. Petr Procházka	Use of fuel cells in traction drives. Supervisor: doc. Dr. Ing. Miroslav Patočka
FEEC	Ing. Radim Burget	Signal transfer for web TV. Supervisor: doc. Ing. Dan Komosný, Ph.D.
FEEC	Ing. Norbert Herencsár	New active functional blocks and their application in frequency filters and quadrature oscillators. Supervisor: doc. Ing. Ivo Lattenberg, Ph.D.
FEEC	Ing. Milan Šimek	Selection of reference nodes for anchorless localization techniques in wireless sensor networks. Supervisor: doc. Ing. Dan Komosný, Ph.D.
FC	Ing. Zoja Vlčková	Chemical and physical transformations of humic acids. Supervisor: prof. Ing. Miloslav Pekař, CSc.
FC	Ing. Jan Haderka	Using fractal and harmonic analysis to characterize physical and chemical phenomena. Supervisor: prof. Ing. Oldřich Zmeškal, CSc.
FC	Ing. Eva Bartoníčková	Synthesis and analysis of composite oxide ceramics in the presence of non-conventional energy fields. Supervisor: prof. RNDr. Jaroslav Cihlář, CSc.
FC	Ing. Jozef Krajčovič	Study of thiophene oligo-copolymers: synthesis and optoelectronic properties. Supervisor: prof. RNDr. Zdeněk Friedl, CSc.
FC	Ing. Lukáš Recman	Deformation behaviour of nano/micro-reinforced PMMA. Supervisor: prof. RNDr. Josef Jančář, CSc.
FC	Ing. Barbora Hohnová	Study of the natural substances contained in selected plants and less common types of small fruit. Supervisor: doc. Ing. Jiřina Omelková, CSc.
FC	Ing. Lenka Šťavíková	Using modern analytic methods to characterize the properties of a wineberry extract. Supervisor: doc. Ing. Jiřina Omelková, CSc.
FC	Ing. Michaela Gregušová	Modification of the diffusion gel technique (DGT) to be used for characterizing natural systems. Supervisor: doc. RNDr. Bohumil Dočekal, CSc.
FC	Ing. Vladěna Kovaříková	Development of gel techniques for in situ measurement of bio-accessible forms of metals in soils and sediments. Supervisor: prof. RNDr. Hana Dočekalová, CSc.
FC	Ing. Petr Majzlík	Radical reactions of the N-H, O-H, and 0-0 bond decays caused by homogeneous and heterogeneous redox agents. Supervisor: prof. Ing. Ladislav Omelka, DrSc.
FC	Ing. Martina Lízalová	Application of selected methods to the analysis of oxidation stress. Supervisor: doc. RNDr. Ivana Márová, CSc.
FC	Ing. Andrea Halienová	Proteom and metabolom changes in selected organisms under stress. Supervisor: doc. RNDr. Ivana Márová, CSc.
FC	Ing. Stanislav Obruča	Regulated production and biodegradation of selected types of biomaterials. Supervisor: doc. RNDr. Ivana Márová, CSc.
FC	RNDr. Renata Mikulíková	Study of selected types of sulphur substances in beer and brewery materials. Supervisor: doc. RNDr. Ivana Márová, CSc.
FC	Ing. Kateřina Fiore	Crystallization kinetics in semi-crystalline nano-composites. Supervisor: prof. RNDr. Josef Jančář, CSc.
FC	Ing. Jiří Sadílek	Influence of the temperature history on the relationship between the structure and properties of an oriented polypropylene. Supervisor: prof. RNDr. Josef Jančář, CSc.
FC	Ing. Petra Jeřábková	Study of the properties of biological material by methods of image analysis. Supervisor: prof. Ing. Oldřich Zmeškal, CSc.
FC	Ing. Jiří Stančík	Degradation of ink prints. Supervisor: doc. Ing. Michal Veselý, CSc.
FC	Ing. Jiří Kislinger	Correlation between thermoanalytical data and the primary characteristics of humified substrates. Supervisor: doc. Ing. Jiří Kučerík, Ph.D.
FC	Ing. Martin Drastík	Using high-definition ultrasound spectroscopy to characterize humic substances. Supervisor: prof. Ing. Miloslav Pekař, CSc.
FC	Ing. Simona Macuchová	Study of the activity of enzymatic and low-molecular antioxidation systems. Supervisor: doc. RNDr. Ivana Márová, CSc.
FC	Ing. Radoslav Trautmann	Effect of composition on the adhesion strength between a particle-filled composite and a fibre reinforced composite. Supervisor: prof. RNDr. Josef Jančář, CSc.
FC	Ing. Ladislav Vilč	Influence of temperature and time on the proportion of crystalline and amorphous phase in polypropylene. Supervisor: Ing. Jan Kratochvíla, CSc.
FIT	Ing. Pavel Očenášek	Automated design of authentication and key distribution protocols. Supervisor: prof. Ing. Miroslav Švéda, CSc.

FIT	Mgr. Marek Rychlý	Formal-based component model with support of mobile architecture. Supervisor: doc. Ing. Jaroslav Zendulka, CSc.
FIT	Mgr. Tomáš Burger	Systems with roles. Supervisor: prof. Ing. Tomáš Hruška, CSc.
FIT	Ing. Lukáš Rychnovský	Grammatical models of computational distribution and concurrency. Supervisor: prof. RNDr. Alexander Meduna, CSc.
FIT	Ing. Jiří Jaroš	Evolutionary design of collective communications on wormhole networks. Supervisor: doc. Ing. Josef Schwarz, CSc.
FIT	Mgr. Kamil Malinka	On Selected issues of behavioural patterns in computer security. Supervisor: doc. Dr. Ing. Petr Hanáček
FIT	RNDr. Jana Sedláčková	Security factors in assessing the labour consumption of software projects. Supervisor: doc. RNDr. Jitka Kreslíková, CSc.
FIT	Ing. Igor Szöke	Hybrid word-subword spoken term detection. Supervisor: doc. Dr. Ing. Jan Černocký
FIT	Ing. Jan Kořenek	Fast search for regular expressions using the FPGA technology. Supervisor: prof. Ing. Václav Dvořák, DrSc.
FIT	Ing. Tomáš Martínek	Evaluating the similarity of biological sequences using the FPGA technology. Supervisor: prof. Ing. Václav Dvořák, DrSc.
FIT	Ing. Aleš Smrčka	Verification of asynchronous and parameterized hardware designs. Supervisor: doc. Ing. Tomáš Vojnar, Ph.D.
FIT	Ing. Petr Weiss	Modelling service-oriented architecture integration of business process and service modelling. Supervisor: doc. Ing. Jaroslav Zendulka, CSc.
FIT	Ing. Petr Svojanovský	Risk management in IT service security. Supervisor: doc. RNDr. Jitka Kreslíková, CSc.
FBM	Ing. Eva Doležalová	Non-financial bankruptcy causes of small and medium enterprises. Supervisor: prof. Ing. Vojtěch Koráb, Dr., MBA
FBM	Ing. Petr Holoubek	Expansion of innovation potential in the SME environment. Supervisor: doc. Ing. Luděk Mikulec, CSc.
FBM	Ing. Aleš Klusák	Managing the intellectual capital using modern methods. Supervisor: prof. Ing. Petr Němeček, DrSc.
FBM	Ing. Marie Staňková	Value management application opportunities to create reward systems. Supervisor: doc. Ing. Mária Režňáková, CSc.
FBM	Ing. Petr Šimeček	Value management and controlling. Supervisor: doc. Ing. Zdeněk Sadovský, CSc.
FBM	Ing. David Král	Information security of a company. Supervisor: doc. Ing. Miloš Koch, CSc.
FME	Ing. Michal Vintr	Cost prediction for quality guarantees. Supervisor: doc. Ing. Vasilij Teš, CSc.
FME	Ing. Hana Uhlířová	Mikroscopy of time-variable biological objects. Supervisor: doc. RNDr. Radim Chmelík, Ph.D.
FME	Ing. Mgr. Eva Žampachová	Approximations in stochastic optimization and their applications. Supervisor: doc. RNDr. Zdeněk Karpíšek, CSc.
FME	Ing. Jindřich Mach	Development and applications of UHV devices for the decomposition of thin layers (atomic and ion beam systems). Supervisor: prof. RNDr. Tomáš Šikola, CSc.
FME	Ing. Vladimír Rak	Computational analysis of the dynamic properties of hydrodynamic friction bearings. Supervisor: prof. Ing. Eduard Malenovský, DrSc.
FME	Ing. Hana Tesařová	Structural and mechanical characteristics of nickel cast irons with spheroidal graphite. Supervisor: doc. Ing. Bohumil Pacal, CSc.
FME	Ing. Pavel Jánský	Coulomb interactions in electron beams. Supervisor: prof. RNDr. Bohumila Lencová, CSc.
FME	Ing. Pavel Urban	Helium cryostat for experimental study of natural turbulent convection. Supervisor: RNDr. Věra Musilová, CSc.
FME	Ing. Martin Zobač	Control and diagnostics of an electron beam for advanced technologies. Supervisor: prof. RNDr. Bohumila Lencová, CSc.
FME	Ing. et Ing. Pavel Pokorný	Construction of the optimal control strategy for an electric-powered train. Supervisor: doc. RNDr. Jan Čermák, CSc.
FME	Ing. Jiří Jánský	Delay difference equations and their applications. Supervisor: doc. RNDr. Jan Čermák, CSc.
FME	Ing. Viktor Fedosov	Microaccelerometric measurements on board of the Russian Universal-2 satellite. Supervisor: doc. Ing. Vladimír Daněk, CSc.

FME	Ing. Petr Doupník	Use of optimization methods in designing a trans-sonic wing while implementing the basic design strength limitations. Supervisor: prof. Ing. Antonín Píštěk, CSc.
FME	Ing. Dušan Mihalides	Evaluating the service life of composite structures. Supervisor: doc. Ing. Josef Klement, CSc.
FME	Ing. Tomáš Urík	Dynamic properties of glued-riveted joints. Supervisor: doc. Ing. Josef Klement, CSc.
FME	Mgr. Jaromír Tonner	Overcomplete mathematical models with applications. Supervisor: doc. RNDr. Vítězslav Veselý, CSc.
FME	Ing. Ivo Liška	Coulomb interactions in electron beams in the vicinity of a Schottky and cold field emission sources. Supervisor: prof. RNDr. Bohumila Lencová, CSc.
FME	Ing. David Škoda	Characterization of 1-D nanostructures using SPM methods. Supervisor: prof. RNDr. Petr Dub, CSc.
FME	Ing. David Lysáček	Thin layers of polycrystalline silicon. Supervisor: prof. RNDr. Jiří Spousta, Ph.D.
FME	Ing. Marek Baláš	Cleaning gas generated in fluid gasification equipment with metal catalysts. Supervisor: doc. Ing. Zdeněk Skála, CSc.
FME	Ing. Petr Bělohradský	Methods for determining the characteristic parameters of combustion processes on the basis of experiments and modelling. Supervisor: prof. Ing. Petr Stehlík, CSc.
FME	Ing. David Jecha	Absorption cleaning of the combustion gas from waste burning. Supervisor: doc. Ing. Ladislav Bébar, CSc.
FME	Ing. Jan Pěček	Correction of wastewater treatment plant sludge before its subsequent use. Supervisor: doc. Ing. Jaroslav Jícha, CSc.
FME	Ing. Vladimír Pecina	Influence of oxygen activity during smelting and casting on the metallurgic quality of iron alloys. Supervisor: doc. Ing. Jaroslav Šenberger, CSc.
FME	Ing. Lukáš Seďa	Evaluation of optimal cutting conditions when milling plastic materials. Supervisor: doc. Ing. Imrich Lukovics, CSc.
FME	Ing. Jan Sedláček	Efficient machining of fibre-reinforced composite materials. Supervisor: doc. Ing. Anton Humár, CSc.
FME	Ing. Roman Weisser	Evolutional optimization of control algorithms. Supervisor: prof. Ing. Pavel Ošmera, CSc.
FME	Ing. Miroslav Zemánek	Influence of Geometrical Parameters on Rupture of Abdominal Aortic Aneurysm. Supervisor: doc. Ing. Jiří Burša, Ph.D.
FME	Ing. Petr Dobšák	Study of the sintering of nano-particle ceramic materials. Supervisor: prof. RNDr. Jaroslav Cihlář, CSc.
FME	Ing. Zdeněk Foret	Concept design and development of a single-purpose scanning electron microscope. Supervisor: prof. Ing. Jiří Švejcar, CSc.
FME	Ing. Luděk Lovicar	Profilometry of surfaces using reflex digital holographic microscopy. Supervisor: doc. RNDr. Radim Chmelík, Ph.D.
FME	Mgr. Štěpán Major	Influence of plasma nitration on the fatigue durability of biaxially loaded high-strength steel. Supervisor: prof. RNDr. Jaroslav Pokluda, CSc.
FME	Ing. Ondřej Man	Diffraction methods including rebound electrons as applied in materials engineering. Supervisor: prof. Ing. Jiří Švejcar, CSc.
FME	Ing. Zina Pavloušková	Using homogenizing annealing to suppress silicon-nickel segregation in LKG. Supervisor: prof. Ing. Jiří Švejcar, CSc.
FME	Ing. Jiří Špaček	Using genetic algorithms to optimize the setting up of design teams. Supervisor: doc. Ing. Josef Šupák, CSc.
FME	Ing. Jiří Vepřek	Using genetic algorithms to optimize the flow conditions in lubrication circuits with progressive distributors. Supervisor: prof. RNDr. Ing. Josef Nevrlý, CSc.
FME	Ing. Ondřej Blaťák	Using mathematical modelling to analyse the measurement of vehicle dynamics. Supervisor: doc. Ing. Zdeněk Kaplan, CSc.
FME	Ing. Jan Vlastník	Computational model of the chain drive as a virtual-engine model. Supervisor: prof. Ing. Václav Píštěk, DrSc.
FME	Sausan Salem Kadam Al-Dury, M.Sc.	Purification of producer gas in biomass gasification using carbon materials. Supervisor: doc. Ing. Zdeněk Skála, CSc.
FME	Ing. Vladimír Ucekaj	Analysing the variants of municipal waste treatment within a microregion. Supervisor: doc. Ing. Ladislav Bébar, CSc.
FME	Ing. Michal Vaverka	Intelligent control methods used to automate the management of building machines. Supervisor: doc. Ing. Miroslav Škopán, CSc.

FME	Ing. Vojtěch Uhlíř	Current induced magnetization dynamics in nanostructures. Supervisor: prof. RNDr. Tomáš Šikola, CSc.
FME	Ing. Libor Borák	Biomechanical study of the human mandible in the physiological condition. Supervisor: Ing. Zdeněk Florian, CSc.
FME	Ing. Lukáš Březina	Optimization of a parallel mechanism design with respect to a Stewart platform control design. Supervisor: prof. Ing. Eduard Malenovský, DrSc.
FME	Ing. Jan Doležal	Prediction in projects using Markov chains. Supervisor: doc. Ing. Bronislav Lacko, CSc.
FME	Ing. Milan Koukal	Mechanical analysis of the influence of production deviations on the hip-joint total-endoprosthesis favea-head joint. Supervisor: Ing. Zdeněk Florian, CSc.
FME	Ing. Iveta Musilová	Progressive manufacturing methods and modelling of structures and properties of alloys with spheroidal graphite. Supervisor: doc. Ing. Jaroslav Šenberger, CSc.
FME	Ing. Lukáš Nešpůrek	Stochastic crack propagation modelling using the extended finite element method. Supervisor: prof. RNDr. Zdeněk Knésl, CSc.
FME	Ing. Vít Obdržálek	Buckling and postbuckling of delaminated composite plates. Supervisor: prof. RNDr. Ing. Jan Vrbka, DrSc., dr. h. c.
FME	Ing. Tomáš Pospíšil	Stochastic Modelling of composite materials. Supervisor: prof. RNDr. Jan Franců, CSc.
FME	Ing. Lenka Raudenská	Metrics and criteria for the diagnostics of sociotechnical systems. Supervisor: doc. Ing. Alois Fiala, CSc.
FME	Ing. Daniel Smutný	Application of surface defectoscopy to surface quality control. Supervisor: doc. Ing. Jiří Pernikář, CSc.
FME	Ing. Martina Šimková	Contribution to the diagnostics of power oil transformers. Supervisor: doc. Ing. Miloš Hammer, CSc.
FME	Ing. Vítězslav Máša	Mathematical model of a biomass boiler for controlling purposes. Supervisor: doc. Ing. Ivan Švarc, CSc.
FME	Ing. Pavel Kolman	Coherence-controlled holographic microscope. Supervisor: doc. RNDr. Radim Chmelík, Ph.D.
FME	Ing. Jan Pokorný	Interaction of mobile industrial machines and the travelled-on subbase. Supervisor: doc. Ing. Miroslav Škopán, CSc.
FME	Ing. Petr Krček	Planning the route of an autonomous locomotion robot on the basis of machine learning. Supervisor: RNDr. Jiří Dvořák, CSc.
FME	Ing. Vladimír Čudek	Study of thin lubrication films by spectroscopic reflectometry. Supervisor: prof. Ing. Ivan Křupka, Ph.D.
IFE	Ing. Aleš Kaplánek	Analysis of drivers' reactions to composite stimuli. Supervisor: prof. Ing. Zdeněk Kolíbal, CSc.
IFE	Ing. et Ing. Martin Cupal	Impact of the price-source-reduction coefficient on the resulting difference index in the comparative method of real estate price estimation. Supervisor: prof. Ing. Albert Bradáč, DrSc.

Table 2.9_4 2010 Awards for students and graduates

The Ministry of Education Prize		
	FME	Hana Druckmüllerová
Best Graduate Rector Award		
	FCE	Martin Horáček
	FFA	Jaroslav Juřica
	FEEC	Jiří Mekyska
	FC	Adéla Koláčková
	FIT	David Herman
	FBM	Michal Karas
	FME	Hana Druckmüllerová
Josefa Hlávka Award		
	FFA	Pavla Kačírková
	FEEC	Jaromír Žák
	FC	Radek Straka
	FME	Jana Hrabalová
PRECIOSA Foundation Award		
	FEEC	Martin Kopecký
	FC	Lenka Hřebenová
	FIT	Zbyněk Poulíček
	FME	Martin Poledno

2.10. University drop-outs

The relatively high number of dropouts, particularly during the first years of Bachelor's degree programmes, is a recurring problem of technical universities. Efforts to further reduce the number of dropouts by reforming the content and structure of the Bachelor's degree courses would only bring about lower quality of graduates. This is characteristic of technical universities in an effort to educate good creative graduates for the industrial practice. The drop-out rate keeps the number of drop outs at approximately the same level. Table 2.10. lists students that dropped out in 2010.

Table 2.10. Dropouts from accredited degree programmes from 1st January 2010 to 31st December 2010

programme group	master field code	Bachelor's		Master's		follow-up Master's		Doctoral		total
		FT	C	FT	C	FT	C	FT	C	
technical sciences	23 to 39	2 553	505	11	3	389	151	71	187	3 870
culture and art sciences	82	7		0	0	9	0	1	0	17
natural sciences	14	0	0	0	0	0	0	0	6	6
economics	62	256	8	0	0	92	73	15	35	479
total		2 816	513	11	3	490	224	87	228	4 372

2.11. Credit system, diploma supplements

BUT makes full use of the European Credit Transfer and Accumulation System (ECTS) and all its compatible instruments in all the Bachelor's and Master's degree programmes. A module of the information system recommended by the EU is used. A free English-Czech diploma with a supplement using the recommended form and content is given to all the graduates.

In 2009 Brno University of Technology received the ECTS Label and DS Label prestigious awards for 2009–2013 in appreciation of its quality as a higher-education institution. BUT is one of the only two Czech universities to be awarded the ECTS Label. It is an appreciation of the correct application of the credit system to all Bachelor's and Master's programmes in an effort to fulfil the objectives of the Bologna process.

BUT's DS Label certifies that the diploma supplements received by the graduates free of charge are correct. Both the labels certify that BUT meets the strict higher-education criteria imposed by the European Union. They significantly help extend student mobility opening the university to international students.

2.12. Specialized cooperation between BUT and the region, links between theory and practice and cooperation with customers

BUT makes every effort to fulfil what is called the third mission of research-oriented universities, which is the transfer of knowledge to practice and support of innovation in the commercial sphere. Ensuring the correct management of intellectual property rights resulting from R&D projects and support of spin-off companies were made the 2010 priorities of the BUT 2011–2015 Mission Statement. At BUT, it is the Technology Transfer Office (TTO) that coordinates cooperation with the application sphere and transfer of R&D results to practice. This department typically searches for the results of the research and development conducted at BUT that are suitable for being commercialised and offered to external customers (including those abroad) using the EEN international database, provides protection for intellectual property rights, promotes newly established technology-oriented companies including spin-off companies, selects companies eligible for the BUT technological incubator (through the Incubator Industrial Board), searches for BUT departments suitable as partners for commercial companies interested in cooperation in research and development and innovation activities (first BUT contact point).

The activities of the TTO concerning cooperation with the commercial sphere in 2010 included 23 patents taken out, 30 utility models and 3 industrial models registered, which is about twice as many as in 2009. This is one of the positive impacts of the BUT Development Project, particularly its patent fund used to pay for activities undertaken to protect intellectual property rights. Other tangible TTO results included the signing of four licence agreements, two R&D result co-ownership contracts as well as the mediation of 16 research projects for partners from the commercial sphere (including five cooperation projects with foreign companies). TTO systematically prepares the internal rules needed for each knowledge transfer area.

Five new directives were issued by TTO in 2010, including a directive on the legal protection procedure of industrial right commercialisation at BUT. The following three methodologies for BUT staff were also prepared by TTO in 2010:

- how to write an R&D project cooperation contract governing intellectual property issues,
- how to write a made-to-order research cooperation contract governing intellectual property rights,
- how the intellectual property rights are to be secured if students are engaged in research and development.

Thanks to its participation in the TT Point project, the TTO could allocate managers to five BUT technological faculties for most of 2010 capable of dealing with the relationships to the application sphere thus extending the portfolio of services offered to BUT faculties by the support for winning R&D orders and joint-projects with the application sphere. The TTO also includes the office of a South-Moravian Regional Contact Organisation (as part of the EUPRO Ministry of Education project) being mostly concerned with consulting and support for the EU 7th Framework projects of the regional institutions including small and medium enterprises. In 2010 (as in 2009), TTO took active part in the preparation and implementation of Innovation Vouchers, a very successful project organized by the South Moravian Innovation Centre. With 35 received vouchers, BUT became the most successful Brno university winning the most innovation-voucher-supported cooperation projects.

Regarding knowledge and technology transfer and commercialization, TTO closely cooperates with regional and international partners such as the South Moravian Innovation Centre, the Brno Regional Chamber of Commerce, and with Yellow Research, MaxInno, and Texas Institute of Science abroad.

2.13. BUT academics

Table 2.13. BUT academics – numbers recalculated

teachers						research staff
total	professors	senior lecturers	senior assistants	assistants	instructors	
1 125	135	271	527	191	1	28

Table 2.13_1 BUT academics – actual numbers

teachers						research staff
total	professors	senior lecturers	senior assistants	assistants	instructors	
1 273	155	313	581	223	1	42

2.14. Qualification and age structure of BUT academics

Table 2.14_1 BUT academics' age structure

age	teachers										research staff	
	professors		senior lecturers		senior assistants		assistants		instructors			
	total	fem.	total	fem.	total	fem.	total	fem.	total	fem.	total	fem.
up to 29 years	–	–	–	–	42	9	88	28	–	–	5	1
30–39 years	1	–	50	1	291	46	103	26	–	–	23	5
40–49 years	15	–	56	11	62	23	24	15	1	1	2	–
50–59 years	49	3	84	13	114	56	6	4	–	–	5	–
60–69 years	56	6	90	11	71	28	1	1	–	–	6	1
over 70 years	34	–	33	4	1	–	1	–	–	–	1	–
total	155	9	313	40	581	162	223	74	1	1	42	7

Table 2.14_2 BUT academic numbers

human resources	total	professors	senior lecturers	others	DrSc., CSc., Dr., Ph.D., Th.D. degrees
employment type	1 338	155	313	870	517
up to 30 %	113	18	21	74	43
up to 50 %	50	4	16	30	10
up to 70 %	130	10	27	93	39
up to full	1 045	123	249	673	425

2.15. Education of BUT academic and other staff

Due attention is paid every year to further education of BUT academics and other staff. English and German courses are offered to BUT employees at different advancement levels – from the beginners' courses to courses offering conversation with a native speaker. Next to language courses also a number of courses is offered for the BUT employees to improve their practical skills (computer courses of different kinds and advancement levels). The offer also includes specialized courses for further education such as marketing, management, project management or soft-skill courses. Complementary Pedagogical Study is among the most attended courses focussing on the improvement of teaching skills. This course is mandatory for all doctoral students being also recommended to the existing teachers who have not yet undertaken any further education. The courses included in the offer are subject to changes as a result of the current demand by the BUT employees and management.

2.16. Further education courses offered to the BUT academic staff (with numbers of their participants)

Table 2.16_1 Further education courses for BUT academic staff

teaching skills courses	general skills courses	specialised courses	total
1	66	3	70

Table 2.16_1 Participant numbers in further education courses for BUT academic staff

teaching skills oriented courses	general skills oriented courses	specialised courses	total
17	590	11	607

2.17. Professors and associate professors appointed in 2010

Table 2.17_1 Associate Professors appointed in 2010

fac.	name	field	appointed on
FCE	Pařílková Jana, Ing. CSc.	physical and building-material engineering	10.05.2010
	Dráb Aleš, Ing. Ph.D.	water management and water structures	16.11.2010
	Pospíšil Pavel, RNDr. Ph.D.	structures and highway construction	09.08.2010
	Špírková Daniela, Ing. Ph.D.	building management	25.01.2010
	Škramlik Jan, Ing. Ph.D.	building structures	25.01.2010
	Tuhovčák Ladislav, Ing. CSc.	water management and water structures	09.12.2010
	Vymazal Tomáš, Ing. CSc.	building management	11.08.2010
FME	Schmeidel Ewa, Mgr. Ph.D.	applied mathematics	01.12.2010
	Blecha Petr, Ing. Ph.D.	design and process engineering	15.04.2010
	Habán Vladimír, Ing. Ph.D.	design and process engineering	02.11.2010
	Janeček Ivan, Ing. CSc.	applied physics	02.11.2010
	Pásek Michal, Ing. Ph.D.	applied mechanics	01.12.2010

	Rudolf Pavel, Ing. Ph.D.	design and process engineering	02.11.2010
	Smejkal Quido, Ing. Ph.D.	design and process engineering	15.04.2010
	Pantělejev Libor, Ing. Ph.D.	materials science and engineering	08.11.2010
FEEC	Lázničková Ilona, Ing. CSc.	heavy-current and power engineering	29.06.2010
	Sedláková Vlasta, Ing. Ph.D.	electrical and electronic technology	29.06.2010
	Kolářová Jana, Ing. Ph.D.	biomedical engineering	18.05.2010
	Dostál Otto, Ing. CSc.	teleinformatics	01.12.2010
	Drápela Jiří, Ing. Ph.D.	heavy-current and power engineering	25.01.2010
	Drexler Petr, Ing. Ph.D.	theoretical electrical engineering	09.12.2010
	Fiedler Petr, Ing. Ph.D.	technical cybernetics	11.08.2010
	Frýza Tomáš, Ing. Ph.D.	electronics and communication technology	01.12.2010
	Fujcik Lukáš, Ing. Ph.D.	electrical and electronic technology	25.01.2010
	Kadlec Jaroslav, Ing. Ph.D.	electrical and electronic technology	09.12.2010
	Kuchta Radek, Ing. Ph.D.	electrical and electronic technology	01.12.2010
	Mastný Petr, Ing. Ph.D.	heavy-current and power engineering	09.12.2010
	Steinbauer Miloslav, Ing. Ph.D.	theoretical electrical engineering	22.06.2010
	Šebesta Jiří, Ing. Ph.D.	electronics and communication technology	01.12.2010
FA	Wahla Ivan, Ing.	architecture	14.06.2010
FBM	Lajtkepová Eva, Ing. Ph.D.	economics and management	02.11.2010
FIT	Herout Adam, Ing. Ph.D.	computing technology and informatics	02.07.2010
	Krupka Michal, RNDr. Ph.D.	computing technology and informatics	07.07.2010
	Janoušek Jan, Ing. Ph.D.	computing technology and informatics	19.11.2010
IFE	Kledus Robert, Ing. Ph.D.	forensic engineering	13.04.2010
	Vémola Aleš, Ing. Ph.D.	forensic engineering	13.04.2010

Table 2.17_2 Professors appointed in 2010

fac.	name	field	appointed on
FCE	Šťastník Stanislav, doc. RNDr. Ing. CSc.	physical and building-material engineering	30.04.2010
FME	Doupovec Miroslav, doc. RNDr. CSc.	applied mathematics	30.04.2010
	Novák Stanislav, doc. RNDr. CSc.	applied physics	30.04.2010
	Věchet Stanislav, doc. Ing. CSc.	materials science and engineering	30.04.2010
	Zemčík Ladislav, doc. Ing. CSc.	manufacturing technology	30.04.2010
FEEC	Boušek Jaroslav, doc. Ing. CSc.	electrical and electronic technology	30.04.2010
FCE	Kudrna Jan, doc. Ing. CSc.	structures and highway construction	08.12.2010
FME	Kruml Tomáš, doc. Mgr. CSc.	materials science and engineering	08.12.2010
FEEC	Filka Miloslav, doc. Ing. CSc.	teleinformatics	08.12.2010
FC	Šedlbauer Josef, doc. Ing. Ph.D.	physical chemistry	08.12.2010
FBM	Dostál Petr, doc. Ing. CSc.	economics and management	08.12.2010

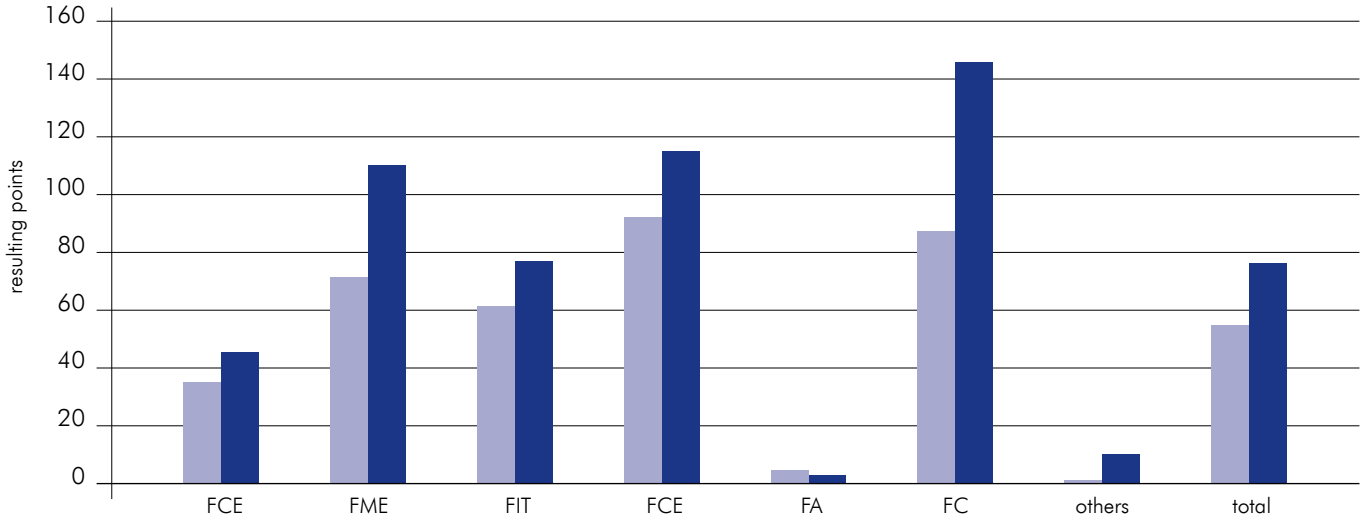
Table 2.17_3 Numbers and age averages of the professors and associate professors appointed in 2010

	number	age average
professors appointed in 2010	11	55,5
associate professors appointed in 2010	35	41,9

2.18. Advancements of research, development, artistic and other creative activities at BUT and strengthening the links between such activities and education

The on-going reform of tertiary education should divide universities into those conducting research as their main activity and those primarily providing education. In the light of this reform, the development of BUT creative and other activities and its links with education is of key importance. The necessity of the development of creative at some faculties is also stressed by the fact that, in 210, BUT won a number of projects of the EU R&DfI Operative Programme guaranteeing their sustainability and pledging to meet a number of monitoring indictors. The intensity of research is rather heterogeneous at BUT as a whole as evidenced by the below diagram showing the numbers of RIV-approved research outcomes in 2003–2008 as evaluated by the BUT Board of Research Development and Innovation in 2008 (light-blue columns) and in 2004–2008 (dark-blue columns) evaluated in 2009. The results are calculated as per one academic to show clearly the efficiency o research.

Results of research per one BUT academic



Owing to the approved R&D results in 2003–2007, in 2010 BUT received 117 million CZK in an institutional support of the long-term conceptual development of a research institution as provided or by an amendment to Act no. 130/2002 Coll. of 2009. This places BUT among the four most successful universities in the Czech Republic in terms of the amount of this institutional support. Looking at the above diagram, one sees that it is exactly the faculties winning the R&DfI OP projects that are the most efficient.

Another very important consequence of the amendment to Act no. 130/2002 Coll. is that the specific research done at universities was qualified for the targeted R&D&I support. According to the rules of the Ministry of Education and the BUT policy, a grant competition was held in 2009–2010 to select projects of specific university research with 157 project selected. There is a very strong involvement in these projects of talented Master's and doctoral students working on R&D&I problems specific for each department receiving grants from other sources of targeted institutional supp-

ort. This is an efficient way to strengthen the desired links between research and education.

In 2010 the national grants (excluding the research centres) received 291 million CZK in total targeted subsidy, which is approximately the same as in 2009 – 209 million CZK. These include the GAČR and GAAV projects with 13 million CZK, the National Research Program II projects with 31 million CZK, and departmental-programme R&D project with 136 million CZK. The last research projects are mostly applied-research-oriented. The subsidy for MEYS Research Centres (1M Centres and LC Centres) was increased from 84 million CZK in 2009 to 98 million CZK in 2010.

Table 2.18_1 Grants, research projects, patents, and other creative activities of the university

grant, research project	source	2010 funding in thousands of CZK
Kontakt (ME)	C	5 612
Bilateral International Cooperation, mobility (MEB)	C	761
EUREKA (OE)	C	1 500
INGO (LA)	C	337
COST (OC)	C	7 508
EUPRO (OK)	C	724
6th Framework Programme (6FP)	A	3 565
7th Framework Programme (7FP)	A	64 180
Ministry of Education programme to support international cooperation programme	C	33 226
AKTION	C	75
EOARD – European Office of Aerospace Research & Development	A	779
Transatlantic Cooperation (EC EU)	A	46
Ministry of Education Research Plans	C	201 302
Ministry of Education Research Centres	C	98 848
Ministry of Education National Research Programme II	C	31 508
Grant Agency of the Czech Republic	B	113 437
Grant Agency of the Academy of Sciences of the Czech Republic	C	9 599
Ministry of Transport	C	4 266
Ministry of Industry and Trade	C	117 806
Ministry of Agriculture	C	3 465
National Security Authority	C	950
Ministry of Regional Development	C	340
Ministry of the Interior	C	9 411
Ministry of the Environment		516
total		709 760

Table 2.18_2 1M Research Centres

fac.	centre name	solution provider	owner
FME	Centre of Aviation and Space Research	Píštěk Antonín, prof. Ing. CSc.	BUT
		solution co-provider	
FCE	Centre of Integrated Design of Progressive Building Structures	Melcher Jindřich, prof. Ing. CSc.	Czech Technical University in Prague
FCE	Centre of Integrated Research of Inorganic Composites	Štěpánek Petr, prof. RNDr. Ing. CSc.	Research Institute of Building Materials
FME	Josef Božek Research Centre of Combustion Engines and Automobiles II	Píštěk Václav, doc. Ing. CSc.	Czech Technical University in Prague
FME	Ecological Centre of Applied Research of Non-Ferrous Metals	Podrábský Tomáš, prof. Ing. CSc.	VUK Panenské Břežany, s. r. o.
FME	Research Centre of Manufacturing Technology	Kolíbal Zdeněk, prof. Ing. CSc.	Czech Technical University in Prague
FME	Centre for Production Quality and Reliability	Karpíšek Zdeněk, doc. RNDr. CSc.	Czech Technical University in Prague
FEEC	Data, Algorithms, Decision-Making	Jan Jiří, prof. Ing. CSc.	Czech Academy of Sciences, Institute of Information Theory and Automation
FEEC	Centre of Applied Cybernetics	Vavřín Petr, prof. Ing. CSc.	Czech Technical University in Prague

LC Programme Centres of Basic Research

fac.	centre name	solution provider	owner/coordinator
FME	Structures for Nanophotonics and Nanoelectronics	Šikola Tomáš, prof. RNDr. CSc.	BUT
		solution co-provider	
FEEC	Centre for Quasioptical Systems and Tetrahertz Spectroscopy	Raida Zbyněk, prof. Ing. CSc.	Institute of Chemical Technology, Prague
FIT	Centre of Computer Graphics	Zemčík Pavel, doc. Dr.	Czech Technical University in Prague

Table 2.18_3 University involvement in research plans

name of research plan	eligible costs in 2010 (in thousands of CZK)
Progressive building materials with the use of secondary raw materials and their influence of the service life of structures	16 074
Waste and biomass processing systems managed with respect to the environment and energy consumption	14 348
Multifunctional heterogeneous materials based on synthetic polymers and biopolymers	20 671
Electronic communication systems and new generation technologies	24 660
Inorganic nanomaterials and nanostructures: production, analysis, properties	17 135
New trends in microelectronic systems and nanotechnologies (MIKROSYN)	22 450
Simulation modelling of mechatronic systems	15 394

Sources, accumulation, and optimization of use of energy under sustainable development	14 859
Progressive, reliable, and durable bearing building structures	15 001
Research of information technology security	26 974
Intelligent system in automation	13 736
total	201 302

Table 2.18_4 BUT Industrial Property Ownership Portfolio (patents in force, etc.) on 31st December 2010

industrial ownership protected by special regulations	subject-matters in force	patent applications published
Domestic patent	15	13
Foreign patent	3	1
US patent	0	0
EPO patent	3	3
Japanese patent	0	0
PCT application published	x	5
CR utility pattern	72	x
Foreign utility model	3	0
Domestic industrial model	6	0
OHIM registered industrial model	0	0
Domestic trade marks	19	2
OHIM trade marks	0	0

2.19. BUT infrastructure (material, technical and information background), access to information and information infrastructure development

Material background

As foreseen by the BUT 2006–2010 Mission Statement and by the programme of property reproduction no. 233340 as approved by the Ministry of Education, Youth, and Sports, activities were carried out in 2010 with the following objective:

- to build new material structures in order to enhance the capacity for teaching, research and development using state-of--the-art equipment making the activities carried out at BUT comparable with those carried out at leading domestic and international universities;
- to repair, reconstruct, and upgrade selected parts of the existing BUT infrastructure so that it can create the same conditions for BUT to be competitive as the newly built infrastructure element.

The following were the major activities carried out to enhance the material infrastructure:

- constructing a building of the faculty of electrical engineering at Technická 10,
- repairing the badly damaged roofing of the building at Poříčí 5,
- reconstructing and thermally insulating the roof of building 50 at Purkyňova 118
- preparing the development area at Kolejní Street
- building a ground for leisure activities of BUT teachers and students
- carrying out external thermal insulation of the building at Technická 8
- reconstructing a training stadium at the Pod Palackého vrchem campus
- reconstructing steam piping at Purkyňova 118
- reconstructing a motor lecture room at FEEC, Research and Education Centre, Technická 12
- FME, NeTME

Next projects were designed for buildings to be financed in the future from the funding of the R&DfI projects:

- reconstruction of the FCE campus at Žižkova 17
- CEITEC
- AdMaS
- FIT, Research Centre of Inf. Technology
- IT4Innovation
- Professor List Research Centre at Technická 14

BUT CENTRAL LIBRARY

The BUT Central Library serves as a coordinating centre of all BUT libraries. It provides consulting services and issues methodological guidelines. The Central Library runs and administers the Aleph500 library system. In 2010 work continued on enhancing the catalogue data consistency removing duplicate entries and checking on the existing catalogue entries and repairing them if necessary to improve the services offered. Integration of the librarian system with the SAP system was among major projects carried out in 2010. By launching this service, the process of ordering specialised literature will be unified and made simpler. Partial steps were made in late 2010 towards launching a new interlibrary-loan module. Being completely redesigned, this service now includes means of standard interlibrary cooperation. The launching is planned for 2011 along with transfer to a new system release. Another large project was cooperation with the BUT Archives – digitalized form of the collections using the Aleph 500 system. As part of the national cooperation of libraries, new librarians were trained to create national authorities. BUT Central Library regularly organises SUAleph Autumn Meetings (Association of Aleph Users). In 2010 the BUT Central Library was chairing the association.

Informational education is among the Central Library's important activities. Courses in informational education have been held at BUT for several years. In recent years, they have been innovated and, since the academic year 2007/2008, they have been implemented through the Moodle e-learning system. Since 2009, the informational education course has been part of the Management in Physical Education degree programme curricula. Attended by over 2000 students, every year the informational education courses are already offered by seven faculties. As foreseen by the course development plan, some study materials have been completed by multimedia contents. The BUT Central Library also initiated a working group for the creation of a new e-learning course in citing. Designed mostly for last-year and doctoral students, it is being create by the BUT Central Library in cooperation with some other universities or their libraries such as the University of West Bohemia in Pilsen and Czech Technical University in Prague. In the past, BUT was involved in eight projects of the INFOZ programme to provide information resources for science and research. When selecting the projects, emphasis was put on obtaining multi-field information resources and databases and maintaining the continuity of the existing collections. Priority was given to full-text information. As a result of the new BUT web presentation launched, the BUT Central Library staff has begun direct their attention to the problems of reconstructing the existing Portal of Libraries. In 2010, an automated mechanism was completed of collecting and processing the full text and metadata of the final projects into the DigiTool system. An archive of the electronic versions of higher-education qualification projects is the largest collection of the Digital Library. In 2010 we were also concerned with the DigiTool system as a system of institutional repository. In this connection, the BUT Central Library has joined an initiative by the Association of the University Libraries in the Czech Republic in support of open access to the research outcomes. BUT participated in an Open Access Week held all over the world to support open access.

Table 2.19. University libraries, library-information services

Yearly collection increase	22 042
Total collection	259 665
Number of periodical titles:	
– paper form	909
– electronic form (estimate))	100
Opening hours in a week (physical)	66
Number of loans to be studied at home	109 243
Number of users	42 678
Number of study seats	823
Number of volumes available for free selection	106 746

VUTIUM PRESS

Nine new title were published (Design of Machine Parts, Measuring in Electrical Engineering, Mystery of the Human Voice, Technological Aspects of Design and Retrofitting of Production Machines, Cartusia Brunensis 2, Introduction to Analytical Mechanics and Mechanics of the Continuum, Cooperation between Technical Universities and Industrial Enterprises, Museum als Ort der Begegnung, Revitalization of

Water flows, and Structural Design). A total of 198 ISBN's were assigned including 102 to the faculties and constituent parts and 96 within VUTIUM (87 scientific writings and 9 VUTIUM's own publications).

Eleven issues were published of BUT News in 17600 copies. Due to the cuts and change in the publishing pattern, VUTIUM prepared a new concept of publishing this magazine in 2011 in cooperation with the editorial board and the editor in chief.

In November, VUTIUM organized a soirée in the Literary Café of the Brno Academia bookshop to present VUTIUM's seven new publications.

In 2010, the editorial board of VUTIUM Press met in December to discuss the publishing plan for 2011 and the order of publishing the titles.

VUTIUM Press took part in five book exhibitions and fairs – Leipziger Buchmesse (March), London Book Fair (April), The World of the Book in Prague (May), Autumn Book Fair in Havlíčkův Brod (October), Frankurter Buchmese, Frankfurt am Main (October). At the Frankfurt book fair, VUTIUM Press representatives took part in a meeting of the Association of European University Presses. The Czech universities were represented by Brno University of Technology, Masaryk University, and Palacky University.

COMPUTER AND INFORMATION SERVICES CENTRE (CISC)

In 2010 the BUT Information System was improved in its Apollo information system for staff and the Portál and Studis portals for students. The following projects were carried out:

- New BUT web presentation was finished using a new technology provided by the VUTPortal4 editing and portal system.
- Data boxes were integrated into the Apollo IS to enable the reception of data news by the personal and faculty data boxes.
- Extending the final-project on-line submission procedure by readability checks and text recognition.
- New web presentations of CISC and Rectorate constituent parts.
- The BUT Apollo Internal Grant Agency was put into operation to allocate specific research funding.
- A bank account was opened in Slovakia o receive payments in Euro for the eApplication and other fees from Slovakia.
- A new tool was designed and implemented in the BUT IS Central Database to graphically document the data relationships.

In 2010, CISC could start using the data centre at Kounicova 67a reconstructed in 2009. This measure may eliminate the impact of a possible air-conditioning failure in the Rectorate building. The CIS can also use backup servers situated in the data centre of the BUT Faculty of Information Technology where all the information from the main data centres is updated on a daily basis.

In 2010 CISC spent 12.1 million CZK on maintaining the KolejNet student network including 1.63 million CZK on a once-in-a--generation overhaul of the active elements and power supply backups and 460 thousand CZK on extending and completing the 10-gigabit backbone KolejNet network and connection of the Mánesovy halls of residence to the backbone of other BUT halls of residence. Server virtualisation has started to be used on a large scale recently using the new virtualisation cluster bought at the end of 2009. All this investment aims to save power while increasing the server performances, network capacities, and faster data retrieval in the event of a system breakdown. Currently there are 6529 active connections with 7174 student computers connected.

As the number of faculty and department computer networks increases, the number ports and the power of the existing access points of the BUT backbone network must be increased on a continual basis. Owing to a development project funded by the Ministry of Education, Youth, and Sports, the active elements could be enhanced at the following sites:

- Faculty of Information Technology, Božetěchova 1 – the number of 10Gb/s ports was increased, IPv6 supported.
- Faculty of Fine Arts, Údolní 19 and Rybářská 13 – the number of 1Gb/s ports and backbone switches at both faculty nodes was increased.
- Faculty of Chemistry and Faculty of Electrical Engineering and Communication, Purkyňova 118 – the number of metal and optical 1Gb/s ports was increased.
- Additional 10Gb/s optical modules were purchased to put new optical routes into operation. The key active elements were enhanced by new redundant power-supply units.

In 2010 the CISC provided ICT services to maintain computers, software and e-mail servers for the Lifelong Learning Institute, BUT Central Library, Rector's Office, and its departments including the Centre of Project Support.

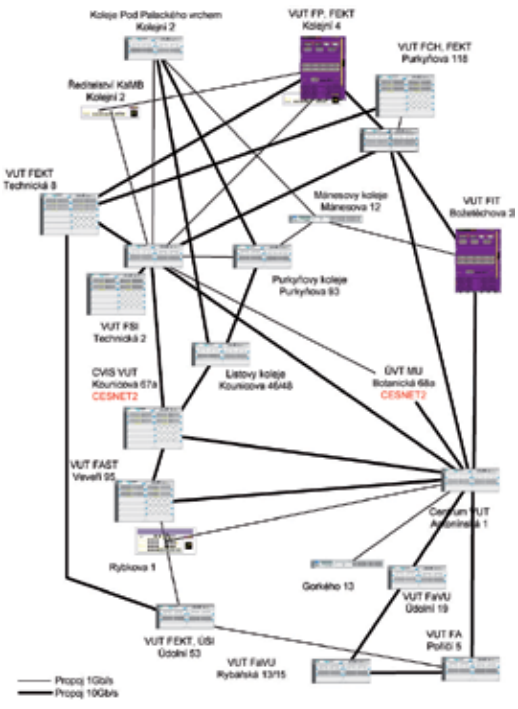
In 2010 the first stage of the fibre optical land route was finished connecting the Pukyňova and Hradecká sites and work was started on the reconstruction of the Purkyňova – Technická route. New optical-route-building technology was tested using „microtubes" consisting in adding a few microtubes to the existing tubes so that they take 480 rather than 48 optical fibres. CISC worked on the project preparation of ICT services, hardware and software equipment of the BUT buildings designed for the CEITEC project. This project also foresees an extendable data centre. CISC also participates in the preparation of a data centre in building D5 for the NETME project of the Faculty of Mechanical Engineering. During the year, CISC dew up an EU project for the R&DfI operative programme. Called

VAVINET, the project aims to build a comprehensive information infrastructure for research and technological development including equipment, tools, and high-rate computer networks connecting research centres to provide for the existing and expected ICT needs of the existing and new BUT R&D departments such as NETME, CEITEC, IT4Innovation, CVVOYE, AMAS and other. The implementation phase of the project should take place from 1st May 2011 to 31st October 2013 with the total eligible costs amounting to 70 million CZK.

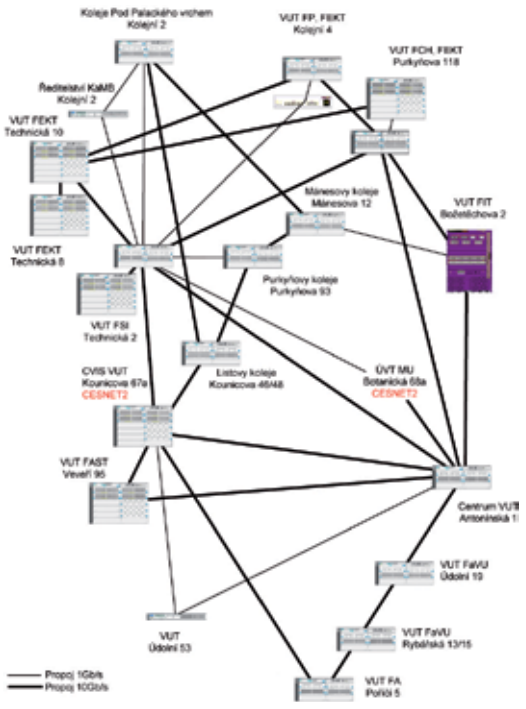
The following will be part of the project:

1. Enhancing the optical network – removing the insufficient fibres and blowing in new ones to provide for bidirectional high--rate transfer capacity for new departments and bidirectional connection with other sites in the Czech Republic, EU, and the world using the CESNET2 network and large infrastructure.
2. Adding new active network elements to enable a full use of the enhanced fibre optical route at the nodes Technická 2 NETME, Božetěchova 1 IT4Innovations, the Kounicova 67a CESNET data node and at other nodes of the information infrastructure.
3. Equipping the data halls at Kounicova 67a, Technická 2, and Božetěchova 1 with backup power supply units, common and cooled racks with exchangers.
4. Providing shared servers for the shared activities of the R&D&I projects. Building a specialised small-scale computing and repository capacity designed mostly as buffers for the connection to large computing and storing capacities built as part of the IF4Innovation and CESNET projects and as tools and as a tool for specialised computations on graphic processors (GPU CUDA) and programmable hardware (FPGA).
5. Buying and installing R&D software packages such as server operating systems, virtualisation systems, computing and database software and software for communication and cooperation of research teams as well as for technical data and document sharing.
6. Providing for operating services and development of information systems for R&D, RIV submitting, R&D performance evaluation and monitoring.

Topology of the BUT backbone network



2010



2011



3 QUALITY AND CULTURE OF ACADEMIC LIFE

3.1. Social affairs of students and employees

Student affairs

Under the University Act, Brno University of Technology awards 300 social scholarships and 15,000 accommodation scholarships monthly. These scholarships are paid from the targeted resources of the Ministry of Education, Youth, and Sports. In justified cases, the deans of the faculties and the director of the university institute may also have social scholarships paid. Since 2009, BUT has been using rector's fund to grant scholarships to students in sudden distress.

The employer grants:

– a contribution to the pension and life insurance of the employees
– a contribution to meals for employees

The employer also supports:

– sports activities of the employees through BUT Centre of Sports Activities, also offering seminars and training courses
– further education of employees through the Institute of Lifelong Learning offering various educational courses
– recreation of employees at the BUT Ramzová and Vříšť holiday resorts

3.2. Counselling, counselling quality management

A student counselling section is part of the BUT Institute of Lifelong Education. Its major activities are directed towards student career counselling and cooperation with companies and organizations. All the services are offered free of charge.
The students can also take development and preparation courses to improve their theoretical knowledge and practical skills. These include courses in communication and presentation skill, courses preparing for entrance exams, and other specialised courses. The counselling section also offers courses for university counsellors.
Career counselling is also in the section's offer helping students choose, search for, and plan for future jobs.
The section staff provides students with psychological support. On demand, they can create a professional and personal profile and or offer career coaching to students with active approach to problem solving.
Regular enquiries are conducted among the students with impact on the activities of faculties to provide a feedback so important for the section's further activities.
The counselling section cooperates with companies and HR agencies offering presentations, the opportunity to publish the student-stays and job offers.

Table 3.2. Counselling offered in 2010

counselling	employees/recalculated full--time employments	number of consultancy hours per week	number of counselling contacts		
			in person	by phone	by e-mail
study	2/0,1	2	190	20	250
psychologycal, social	2/0,4	8	168	30	270
career	2/0,5	16	530	50	1 100
other	2/0,6				320

Note: Counselling is provided by two 0.8-time employees.

Students mostly receive counselling in person. In counselling by phone or e-mail the numbers of contacts are shown.

3.3. Disabled candidates/students at universities

In recent years, BUT has used considerable resources of various origin to support students with different forms of disablement. Thanks to numerous reconstruction projects, almost all the buildings on the BUT campuses have barrier free access.

3.4. Exceptionally talented students

Care of exceptionally talented students is mostly taken by the faculties. In recent years, BUT has participated in development programmes in support of talented students mostly in engineering and science fields. Active support is also given to other programmes in this area including Education for Competitiveness operative programmes.

3.5. Partnership and cooperation between BUT and employers in creating and implementing degree programmes (such as in creating profiles and study results)

BUT is active in various forms of cooperation with commercial enterprises. It has its representative in the Chamber of Commerce, which is a platform for establishing and developing contacts with commercial enterprises. Also in cooperation with the Brno Regional Chamber of Commerce, BUT works on a project within the Education for Competitiveness operative programme. In creating their degree programmes, the technical faculties cooperate with large companies in their field of specialisation, particularly the faculties of civil, mechanical, and electrical engineering.

3.6. Accommodation and catering services at BUT

Table 3.6. Student care – accommodation and meals

Total number of beds at BUT halls of residence	7 042		
Number of beds in hired facilities	0		
Number of accommodation applications submitted until 31st December 2010	7 994		
Number of accommodation applications granted until 31st December 2010	6 841		
Percentage of approved accommodation requests	85,6		
Number of bed-days in 2010	1 889 011		
Number of main meals sold in 2010	total		
	1 984 984		
	including:		
	students	BUT staff	others
	1 795 645	95 539	9 300



4 INTERNATIO-NALIZATION

4.1. BUT Strategy in international co-operation, key priorities

The main objective of the long-term plan of the Ministry of education, Youth and Sports for 2011–2015 is a major change in the direction of the university from quantity to quality. Since internationalization is BUT's long-term strategic objective, its management decided to concentrate on particular areas. The priorities were set in the university's mission statement. The first objective is to increase the number of students of Master's courses from Slovakia. They are expected to stay to continue their doctoral studies and participate in on the R&DfI projects. Another objective is to support the establishing of contacts with universities in America and Asia as well as stabilising the cooperation with the Central European universities.

When recruiting international students, the university as a whole and its faculties offered all degree-type programmes focussing on of excellent doctoral students from abroad. The services and assistance offered by the South Moravian Centre for International Mobility were used to a maximum degree. The centre granted 38 one-year start-up scholarships in 2010.

We received a subsidy from the Ministry of Education, Youth, and Sports for the scholarship fund intended for international students at BUT. In 2010 scholarships were regularly received by 34 students. This development project thus partially completed the scholarship fund with a total allocation of 2490000 CZK. This subsidy gave a new momentum to the processes of internationalization, research, and marketing activities at BUT.

In addition to the above figures, also the demographic composition can be pointed out of the group of students to which the scholarships were paid. These included students from Bosnia and Herzegovina, Mongolia, Russia (the majority group), Serbia, Syria, and Ukraine.

Also the participation should be mentioned of BUT in SoMoPro, a project administered by the South Moravian Centre for International Mobility which aimed to increase the number of top Czech and foreign scientists working or staying at Brno universities.

The university's activities at international and national education fairs were also of importance. These included the Brno and Prague parts of the GADEAMUS international education fair which saw BUT's innovated stand. Owing to the geographic position, language proximity and the number of Slovak students studying at BUT, it continues to be of topmost priority to actively participate in ACADEMIA, a Bratislava education fair. New cooperation agreements were signed with the following universities: Gulf Private University Allepo, Syria, International Black Sea University, Georgia, Al-Hussein Bin Talal University, Jordan, and Universidad La Salle, Mexico. The university is also active as a member of European University Association (EUA), Conference of European Schools of Advanced Engineering Education and Research (CESAER), and other organizations.

4.2. BUT involvement in international educational programmes

Together with foreign universities, BUT offers three accredited joint- and double-degree programmes. Each faculty can get involved in other European degree programmes as can be seen in Tables 4.2_1 and 4.2_2.

Table 4.2._1 Participation of BUT in international teaching cooperation programmes – EU programmes for teaching and vocational training

programme	LLP						
	Erasmus	Comenius	Grundtwig	Leonardo	Jean Monnet	Erasmus Mundus	Tempus
number of projects	1						1
number of outgoing students	640						
number of incoming students	378			2			
number of outgoing teachers	190						5
number of incoming teachers	51						7
number of other outgoing staff	37						
number of other incoming staff	5						
subsidy (thousand CZK)	26 134						881

Table 4.2_2 Participation of BUT in international teaching cooperation programmes – other programmes

programme	Ceepus	Aktion	others
number of projects	2	1	5
number of outgoing students	11		204
number of incoming students	11		56
number of outgoing teachers	6		15
number of incoming teachers	1	2	13
subsidy (thousand CZK)	295	55,6	1 739

Financing science and research from international funds is one of significant options. These include international projects receiving funding from the COST, EUREKA, EUPRO, AKTION, INGO, CONTACT, 6FP, and 7FP grants. Participation in international projects is very important for internationalizing scientific research. It should be noted that, by participating in international projects, BUT will win not only money, but also chances to better develop scientific and research activities through cooperation with other European institutes, which helps improve the professional quality of academics, undergraduate, and doctoral students gaining BUT more world renown. The following diagrams compare the total monies and funding spent on particular projects and numbers of projects within each programme in 2009 and 2010.

Table 4.2_3 International cooperation programmes at BUT

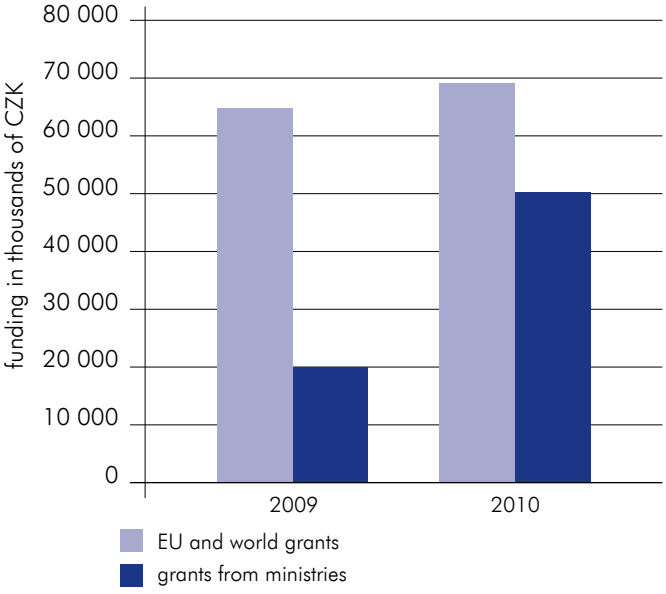


Table 4.2_4 International cooperation programmes at BUT

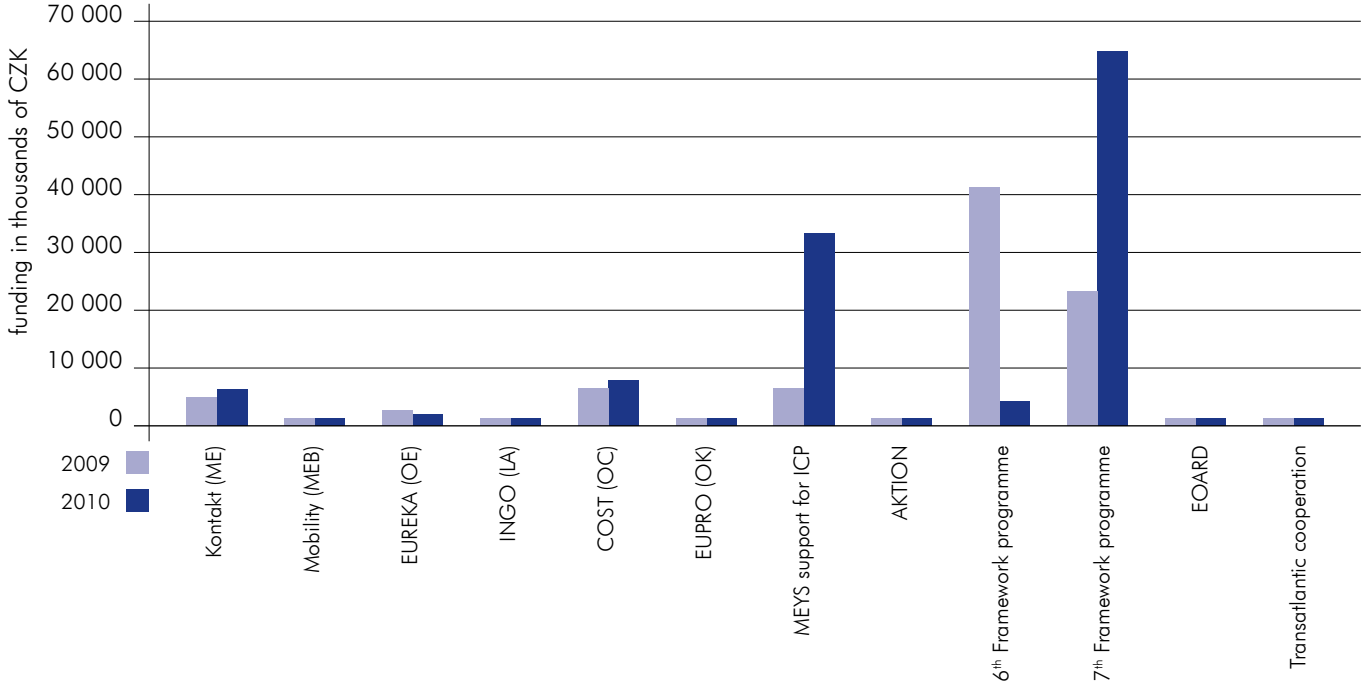
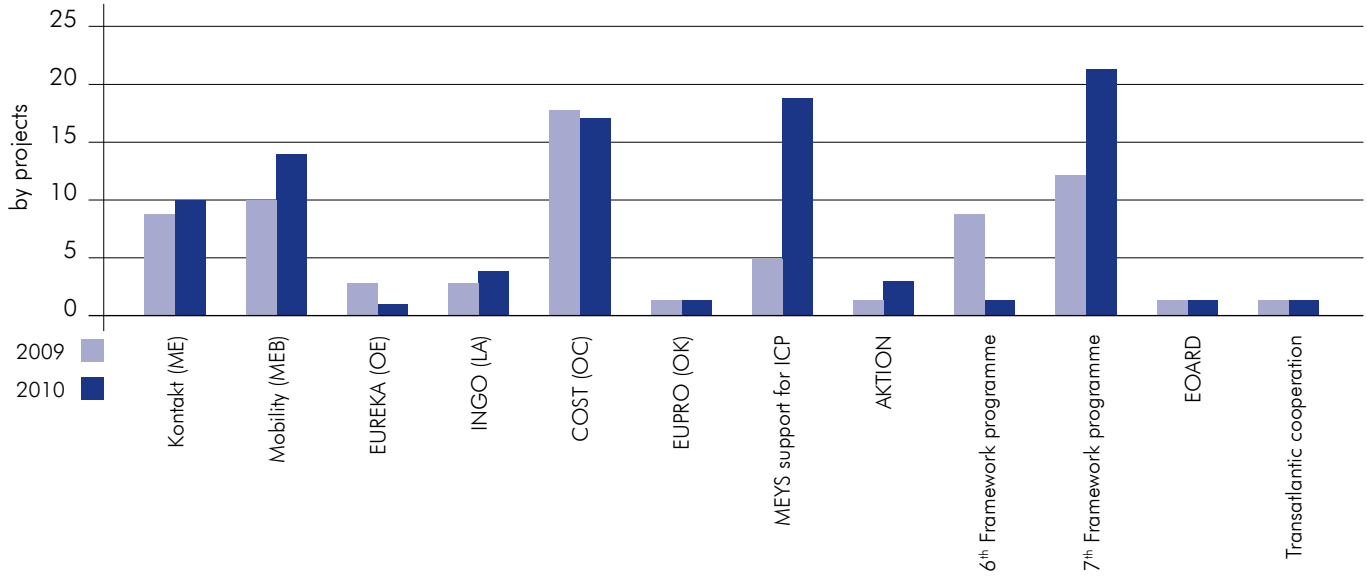


Table 4.2_5 International cooperation programmes at BUT



The fixed amount for each 2010 programme can be found in Table 4.2_4.

4.3. Student and teacher mobility

In recent years, student and teacher mobility has been among BUT's strategic goals. It is funded from MEYS development projects, the LLP/Erasmus EU programme, BUT Mobility Scholarship Fund, faculty scholarship funds, and many other resources. Apart from LLP/Erasmus and MEYS development projects, the teacher mobility is supported by project activities of faculties.

4.4. Student and teacher mobility by countries

Table 4.4. Student and teacher mobility by countries

country	number of out-going students	number of in-coming students	number of out-going academics	number of in-coming academics
Argentina	1		2	1
Australia	3			
Belgium	29	3	3	1
Bosnia and Herzegovina			1	
Brazil	1			
Bulgaria	11	11	5	1
Monte Negro	2	2	3	1
Denmark	73	1	4	1
Estonia	3	5	3	
Finland	48	8	20	1
France	61	27	46	6
India		1		
Ireland	1		1	
Iceland			2	
Italy	25	6	14	1
Japan	1			
Korea			1	1
Kenya				1
Columbia	2	1		
Cyprus	1			
Latvia	18	8	2	
Lithuania	2			
Hungary	4		3	3
Macedonia	1	1		
Malta	4	2		
Malaysia		1		
Morocco		1		
Mexico	1	2		
Germany	89	10	22	11
the Netherlands	39		3	1

Norway	14		6	1
New Zealand	1			
Poland	8	5	7	2
Spain	45	91	10	6
Austria	106		18	29
Rumania	2	1		2
Russia	10	22	2	
Greece	39	76	10	2
Slovakia	17	19	23	6
Slovenia	26	9	8	6
Serbia	6			
Syria			2	
Portugal	55	79	27	4
Sweden	32		3	2
Switzerland	24		3	
Taiwan	4			
Turkey	19	45	7	3
Ukraine		5		2
USA	6		1	3
United Kingdom	71	8	14	8



5 ENSURING THE QUALITY OF ACTIVITIES CARRIED OUT AT BUT



5.1. Education quality assessment system at BUT

Internal assessment

The quality of education is assessed systematically at all BUT faculties as required by the University Act no. 111/1998 Coll. as amended and the BUT Constitution. This includes institutional assessment by study-field and subject boards as well as individual assessment during class inspections, targeted pedagogic discussions and experience sharing between the teachers. The outcomes of such activities are used immediately to innovate and modernize the content of the educational process providing it with a methodological framework, and improving the teacher's qualification.

An indispensable part of internal quality assessment at BUT faculties is the quality assessment of the course contents or teachers and their methods carried out once or twice a year by enquiries among the students in the form of electronic or paper questionnaires. This assessment is organized by faculty managements in cooperation with the student chambers of the faculty academic senates. The assessment results are taken into consideration in appraising teachers and assigning them to courses. In 2010 work was started on unifying the methods and content of the student ratings at faculties to achieve their eventual integration.

External assessment

BUT graduates provide important external feedback. A systematic questionnaire enquiry is conducted once or twice a year to find out about the graduates' views on the education they have received and the jobs being offered to them. The outcomes of such inquiries had been incorporated in the BUT strategy, the BUT 2011–2015 Mission Statement and its update for the year 2011. In addition to this, the faculties' institutes and teachers frequently meet graduates providing them with consultations or directly cooperating with them on their specialised tasks and issues, which provides feedback on the graduates' knowledge acquired and its suitability for practical jobs. Another opportunity to better assess the quality of teaching and its outcomes is regular contacts with several companies as the present graduates' employers. Another, official opportunity is days of companies held annually at faculties where cooperation is discussed, jobs offered to students about to graduate, with the companies' HR staff informing on the profiles and competences of their prospective employees and commenting on the improvement of the present BUT offer. A good opportunity for mutual informing and experience exchange is also direct practical and research cooperation between the BUT staff and students and experts from practice.

Necessary and thus obvious is cooperation between BUT and the Accreditation Committee on the accreditation and re-accreditation of degree programmes.

No external quality assessment was conducted at BUT by an international committee in 2010. Critical comments from previous external assessments (mostly an institutional assessment carried out by the European University Association) are still gradually responded to in preparation of a 2011 follow-up evaluation which, following a decision of the BUT management, was ordered from the EUA. For this reason, a new internal assessment following a plan received previously was carried out in 2010 that was used as the basis of a self-evaluation report. This report was submitted to an EUA Evaluation Board to be used by a committee visiting BUT in January 2011 to carry out interviews.

5.2. Quality management and assessment in other spheres of BUT activities

Quality as part of the BUT strategy

For BUT, quality assurance is a matter of strategic priority. Regarding this area, the university conforms with the national and international documents, such as the current recommendation by OECD experts provided for the Czech higher education institutions (not only for quality management) and with the subsequent suggestions to reform the tertiary education in the Czech Republic. Also the Standards and Guidelines for Quality Assurance in the European Higher Education Area as a basic Bologna-process document are respected.

A long-term plan for quality assurance is part of the BUT 2006–2010 Mission Statement, in 2009 a process began of its incorporation in the BUT 2011–2015 Mission Statement. Particular aims and tasks are included in the annual BUT Mission Statement revisions being fulfilled within the Development Programmes of the Ministry of Education, Youth, and Sports. The fulfilment of quality assurance tasks was mostly supervised by the BUT management, Academic Senate and a BUT quality assurance task force.

Both internal and external resources were used to carry out the activities required as well as cooperation and exchange experience with other higher-education institutions including the Ministry of Education Centre for International Services – the Bologna Experts programme; Czech Conference of Rectors; Council of Higher Education Institutions; Centre for Higher-Education Studies; Masaryk University, Janacek Academy of Music, University of West Bohemia, Technical VŠB-University of Ostrava, Jan Evangelista Purkyně University, and others). Attention was paid to quality assurance and assessment.

Efficient support from the university and faculty managements is BUT's strength in quality assurance. On the other hand, the yet insufficient communication with the academic community on the need of a comprehensive approach to assuring the quality of activities and environment must be seen as its weakness. However, opportunities have already been created for starting the necessary education and cooperation.

Internal quality assurance

In 2010, quality was the focus of a BUT decentralized development project, financed from the funds of the Ministry of Education, Youth, and Sports within development programme no. 9 designed to overcome the weaknesses of universities. There were several key objectives to this project, all of them having been achieved, with the following applying to BUT:

- maintaining the knowledge and skills necessary to manage and assess the quality in view of the current international and national trends and requirements using previous experience from cooperation on international and national projects;
- finish the staffing of the BUT quality assurance task force and defining the scope of its activities, organisational structure, system of management, competencies, and responsibilities;
- defining the relationship and way of cooperation between the centre and BUT constituent parts, between individual constituent parts, between quality management and university, faculty management departments
- directing the quality assessment and management processes in 2010 towards education – with participation of students, teachers, and other staff involved in the educational process, graduates, and external clients;
- continually passing the results of to the BUT management and the relevant committees. A detailed report of the fulfilment of this BUT development project including the verifiable outcomes and specifications of the subsidy spending was submitted to the Ministry of Education, Youth, and Sports in January 2010 being approved without comments.

It is of considerable help that the BUT quality assurance task force started systematic efforts in 2010 to certify the BUT Rectorate in the first place expecting to certify faculties and other BUT constituent parts in the years to come.

Internal and external quality assurance

A) BUT participating in national quality assurance projects

a) Quality Assurance and Assessment in the Tertiary Education System. This is a MEYS project, part of the Education for Competitiveness operative programme of the Lifelong Education System Framework priority axis. In 2010, the future main project supervisor together with other BUT staff made considerable efforts to draw up a project application and participate in the approval processes now being significantly involved in work on this national project, which will help in reforming the Czech higher education and continually evaluating, both from within and from outside, the quality of its processes and results.

b) Quality of Higher-Education Institution, a set of documents for the Czech Rectors Conference – in 2010 a BUT representative worked on a committee created by the CRC that designed qualitative indicators for assessing the performance and quality of higher-education institutions. This methodology is now being discussed by experts.

B) BUT participating in international quality assurance projects

a) Benchmarking projects – since 2009 BUT has been involved in the international Curricular Reform and University Management benchmarking projects, organized by the European Centre for Strategic Management of Universities (ESMU) and the European Benchmarking Initiative (EBI) for the years 2009 to 2010. Within these projects, studies are conducted assigned on a continual basis concerning active participation in international workshops intended for establishing contacts and direct cooperation to exchange and comment on experience, to devise new approaches to problem solving to draw up project final reports evaluating and comparing the participating institutions. The outcomes of both parts of this project were used at the BUT centre and faculties.

b) Ranking projects – since 2007 BUT has been systematically concerned with ranking, particularly in view of the THES – QS World University Rankings (formerly in cooperation with The Times), which seems to be the most frequently used ranking of universities. BUT also keeps a close watch on the rival Academic Ranking of World Universities, set up by Shanghai Jiao Tong University's Institute of Higher Education (The Economist). Further BUT considers as noteworthy the CHE University Ranking gradually gaining ground in the EU.

BUT applies the outcomes of the ranking studies to the management and decision-making processes and, considerably, to encourage and motivate the academic staff in order to achieve a prestigious ranking and improve competitiveness.

In 2010, as a pilot university, BUT participated in a multi-dimensional global ranking of universities U-Multirank managed by CHEPRA Network. This project exists in two variants: U-Map and U-Rank. BUT was incorporated in the enquiry as a whole along with its faculties of mechanical engineering, electrical engineering and communication, and business and management including student teaching assessment.

c) In 2010 BUT performed the necessary formal steps and study preparation necessary to join, as a pilot university, the international project, Identifying Barriers in Promoting the European Standards and Guidelines for Quality Assurance at Institutional Level (IBAR). The project receives funding from the EU Lifelong Learning programme being coordinated by CSVŠ, v. v. i., ČR. IBAR solution co-providers are research and higher-education institutions from six European countries. The project will be implemented from 2011 to 2013.

Following barrier identification and description, recommendations will be formulated for modifying those ESG parts concerning quality assurance at higher-education institutions and their cooperation with secondary schools. These recommendations will be given to EU top institutions (EC, EUA) and published abroad.

5.3. Data on financial audit

Setting up and maintaining an efficient internal audit system.

Under Act no. 320/2001 Coll., concerning financial audits, a BUT internal auditing system (IAS) including financial audits, was defined and configured by internal regulations in 2004. This created conditions for economical and purpose-fitted spending while fulfilling the BUT Mission Statement objectives. The internal regulations governing IAS are amended if needed in view of the university actual management requirements. Some large ESF supported and funded projects were launched at BUT in 2010 (Education for Competitiveness and Research and Development for Innovation operative programmes). In this connection, financial transactions had to be complemented by specific project management needs. Other financial audit elements were applied to their efficiency under the specific circumstances of each project. This means that in 2010 also the university secondary inspection system, the internal audit, had to be activated. At the end of the year, the Financial Controls and Internal Audit Division consisted of seven employees. This fulfilled the requirements concerning the IA performance resources. To meet the legal requirements of the operative programmes necessary to check the IAS for efficiency, processes within IA had to be improved. The documents of the Financial Controls and Internal Audit Division (IA Statutes, IA Manual) contain the principles and requirements of the IA International Standards. Modified to suit the specific conditions at BUT, govern the IA procedures. During the year, the major drawbacks detected by the IA and the corrective measures recommended to maintain the efficiency of the IAS were discussed by the BUT management and by the rector's advisory bodies. Apart from the standard university risk management, the identification and evaluation of the risks resulting from work on the project's tasks were discussed during the year at the Committee for the R&DfI Risk Management, a separate, specifically established advisory body of the rector. The recommendations the committee made were continually implemented into the existing or new internal rules.

Information on suspected and proved cases of corruption.

In connection with the audit methods, there were no cases of corruption proved at BUT.



BUT DEVELOPMENT

6

In 2010, too, BUT was strongly involved in the University Development Fund projects. Table 6.1. shows the subsidies in UDF project categories.

6.1. Involvement in the University Development Fund

Table 6.1. BUT Involvement in the University Development Fund Programmes

thematic group	number of projects accepted	funding received in thousands of CZK		
		capital subsidy	ordinary subsidy	total
A	11	18 485	0	18 485
B	0	0	0	0
C	1	0	229	229
E	0	0	0	0
F	76	0	16 986	16 986
G	89	0	12 714	12 714
total	177	18 485	29 929	48 414

6.2. Involvement in the development programmes for public higher-education institutions

Table 6.2. BUT Involvement in the 2010 development programmes for public higher-education institutions

development programmes for public universities	number of projects accepted	funding received in thousands of CZK	
		capital subsidy	ordinary subsidy
Programme of the development of equipment and state-of-the-art technologies		3 948	1 552
Programme of support for international cooperation in university education		180	11 220
Programme of support for the preparation of operative programme projects		21 963	1 537
Programme of support for persons socially and/or economically handicapped or disabled before, during and, after the study		0	700
Programme of support for university HR development		0	3 800
Programme of support for further education		0	800
Programme of support for improving the weaknesses or supporting the strengths of a university		0	11 029
Joint centralized development projects (BUT as the coordinator)		4 098	4 976
University's own centralized development projects		0	350
total		30 189	35 964

CONCLUSION

7

In many aspects, but mainly for economic reasons, the year 2010 was more difficult than the previous ones for Brno University of Technology, for the Czech higher education, as well as for whole society. Despite this, BUT was heading in the right direction without disturbances in all major and secondary areas.

The academic senate made every effort to improve the university strategic and operative management, seeing to it that the self-governing and other bodies carry out their activities in a balanced way and encouraging communication effective communication between all the members of the academic community. Emphasis was placed on developing human resources particularly in the lower-age group, on risk and change management, on building a system of management and quality assurance, on more efficient marketing, improving the performance and quality in all areas of the university's activities. The primary purpose of all this was to boost the university's prestige and enhance its competitiveness.

As the only Czech university in 2010, BUT achieved excellent results in the Czech Top Hundred prestigious competition, ending up among the seven best Czech institutions in the Health-Education-Humanity category. This award testifies to the correctness of the chosen path that takes BUT among the best in tertiary education and research making it strong economically, too. This is also one of the results of the carefully developed cooperation with the commercial sphere.

BUT has long been among the best three percent of the world's about 18000 universities according to the internationally recognized QS World University Ranking formerly cooperating with The Times.

Winning more than 5 billion of CZK in grants, BUT is one of the most successful Czech universities in receiving funding from the European Structural Funds. This money is primarily spent on the development of the research infrastructure in materials technology as well as on building top European scientific teams.

BUT is also very good at cooperating with the commercial sphere. This has been proved by several gold medals won by BUT at international exhibitions on the Brno Exhibition Ground for its products.

Concerning the university management, BUT was in black numbers at the end of 2010 thanks to the well balanced budget and appropriate operative measures taken despite additional third-quarter cuts in the funding of teaching, science, research, development, innovation, and other activities.
Even with the above-mentioned cuts in the state-budget subsidies resulting in frozen fixed parts of the employees' pays, currently, there was an increase in the total amount of salaries paid in 2010 as compared with the previous year, more specifically, of 4.6 percent with the average pay at BUT being increased by 0.26 percent.

All the major construction projects planned for 2010 have been implemented to the necessary extent.

It was very difficult to deal with the accumulating problems faced in education due to the uncertainty and time overlap of the prepared state-leaving-examination at secondary schools with the university admissions, which particularly makes the registration of first-year Bachelor's students extremely difficult to organise.

Creative activities at BUT are marked by successful efforts to win EU and other grants and to complete projects as well as by possible risks during this process. A positive fact is the incorporation of specific research in the targeted R&D&I funding, thanks to which talented Bachelor's and Master's students be engaged in work on research projects.

One of the important strategic goals in external relations is support for internationalization at BUT by recruiting international students, for instance, by BUT taking part in education fairs abroad and signing cooperation agreements with foreign universities. Important is also a SoMoPro project managed by the South Moravian Youth Mobility Centre to increase the number of Czech and foreign top scientists participating in university research and development.

Important activities were also recorded in the area of information services provided such as the implementation of a new BUT web site, several new models of the BUT Apollo IS as well as a considerable sum spent on the development of the KolejNet student network. Prepared is VAVINET, a new EU project to be financed from the S&RfI EU operative programme, which should provide a comprehensive information infrastructure for research and technology development.

Among the nine new publications edited by VUTIUM Press, Machine Design, a textbook that has long been missing in the Czech environment, may be seen as the most significant.

Integrating BUT's librarian system with the SAP information system is one of BUT Central Library's major projects aiming to simplify and unify the process of ordering books for the library. An important part of this project consists of courses in information education implemented through Moodle, a university e-learning system provided by the BUT Central Library for seven of BUT's eight faculties.

This annual report provides an appraisal of the finished year 2010. This is, however, done at a time when we are already in all earnestness and with full responsibility at work dealing with the new tasks, problems and challenges of 2011 – knowing that the way they are resolved may have far reaching impacts. We believe that Brno University of Technology will continue to develop while remaining a distinguished Czech and international technical university.

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