BRNO UNIVERSITY OF TECHNOLOGY ANNUAL REPORT 2014

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is submitted as required by Act no. 111/1998 Coll. concerning universities. It was made according to the university activity guidelines for 2013 published by the Ministry of Education, Youth, and Sports. To a wider public, it presents data and major results of all the activities related to Brno University of Technology as part of the Czech and international higher education system, research and social activities.

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INTRODUCTION

RECTOR'S WORD

Although an annual report comes only once a year, it does come with unceasing regularity like the Sun. Being a mandatory document with a seemingly invariable content, one is prone to believing that nobody reads it. However, it does bring new data and information each time it appears. Even if nothing can be missing in it, still it cannot cover everything. The present annual report is looking back at the year 2014 and summarizing the way we were at BUT. It may also, at an imaginary starting line, feed us with information for our reflections about how we were, how we are, how we wish to be, and how we ought to be.

The report cannot contain everything because the experience of each person at BUT has been distinct. For our university, this was a very important year, which marked BUT's 115th anniversary or 165th anniversary of the teaching of engineering in Brno and Moravia. For me personally, this was the first year to hold the office of rector trying to serve the interests of academics and staff of our prestigious university, which, in a number of areas, is a really competitive European higher-education institution. Although the students' experience of the past year may be different from their teachers' and faculty staffs', we should still all be aware of our common ultimate goal to be proud of our work for Brno University of Technology, for a trademark of some reputation. Let us all join the effort of helping BUT stay a synonym of quality in all its activities.

It was at the meeting of the academic community to mark the 115th anniversary that, in line with my election programme, I pointed out that our university rests on people, particularly those who push it forward by their excellence. In my new office of rector, particularly after a new bursar resumed his office, I have been guided by my election motto, which may seem a bit untypical of a civil engineer: „less budget money spent on concrete and construction and more on people". Unfortunately, due to the obligations from the past, to methods of management at many BUT levels "stuck in a rut" preferring investment in construction to the needed support for the academic staff, in view of the past way of planning, organizing and managing construction, and the number of unfinished buildings as well as due to complications at particular building sites, this has not been and will not be easy.

Still, I am convinced that helping the science and engineering education regain its just social prestige and appreciation is a major challenge we are facing. Most of the programmes we offer is already now competitive on an international scale, but we still need to strengthen their positions because it is this that may bring prosperity to our university and to the Czech Republic, too. However, we go even further. I am really glad that a model of technical education for the youngest, the Technical Kindergartens project, my colleagues and I helped to launch, has proved viable and is gaining support all over the Czech Republic. At present, BUT is a member of the solution providing team for a pilot education project for all aged 3 to 99 with other members including the South Moravian Region, the Ministry of Education, Youth, and Sports, and the Ministry of Industry and Trade of the Czech Republic, to be implemented in Kuřim for the mechanical engineering area.

Characteristic of the past period was a major and, above all, successful, development of creative activities at BUT in many areas and forms. We gained two centres of excellence, CEITEC and IT4Innovations, and five regional centres situated at faculties. This is an incontestable and unique success and move forward, which might be commented on using the words of Bertold Brecht: "We have overcome the difficulties of the mountains, now we are facing the difficulties of the planes." In other words, we should ensure the sustainability of these centres. For completeness' sake, we should note that there is one more "big mountain" ahead: finishing the CEITEC VUT at a standard allowing for quality research comparable with the world's standards. I would like to point out that this is one of the BUT management's priorities, and expect particularly the solution-providing teams to do their best for these priorities to prove that they still deserve the support by the whole university.

Regarding not only the sustainability of the projects already won, but also the new programme period, I consider it important to stress the need of favourable conditions created by the university, faculties, and constituent parts, reasonable coordination of activities at faculties and at the rectorate, as well as a responsible and open attitude of both project owners and solution providers. Winning a project is not only success but often involves risks that need to be minimized and obligations that must be met in the future. Ensuring the sustainability of the existing projects as well as winning new ones will require analyses, new optimum paths and their transparent justification. A condition necessary for this will be the timely and complete informing of the academic community about all the issues related to their work. Therefore, it is necessary for the centres of excellence and other research centres to generate jobs, be able to show results, and achieve profit that must be justly distributed. We should not, however, neglect those constituent parts that no longer drew on funding and support for the RDI projects in the already closed period, but contributed funding to creating favourable circumstances for those successful before.

Finally, for all our projects, we should not forget about our mission: provide quality, demanding, and highly professional education helping our graduates find good jobs.

prof. RNDr. Ing. Petr Štěpánek, CSc.

SIGNIFICANT EVENTS

Professor Brian Barsky from University of California, Berkeley, CA, USA, the world's leading expert in computer graphics, geometric modelling, optometrics, and vision, spent several months at the Faculty of Information Technology.

EVENTS

Appointed by president Miloš Zeman in January, Prof. RNDr. Ing. Petr Štěpánek, officially assumed the office of BUT rector one month later along with his team, doc. Mgr. Irena Armutidisová as vice-rector for marketing and external relations, doc. Ing. Vojtěch Bartoš, Ph.D. as vice-rector for development, and prof. RNDr. Miroslav Doupovec, CSc., dr. h. c., as vice-rector for study and student affairs. Vice-rector for the promotion of science and research is prof. Ing. Lubomír Grmela CSc., and vice-rector for international relations is doc. Ing. Marcela Karmazínová, CSc.

A new Centre of Information Technologies at the IT4I Centre of Excellence was opened in March on the premises of a former Cartesian monastery at the campus of the Faculty of Information Technology. The state-of-the-art equipment of a three-story building with connection to a supercomputer in Ostrava will be used by the faculty scientists engaged in experimental development and contracted research in cooperation with the industrial sphere.

◁ An overhaul was finished in 2014 of a building at Technická 8 of the Faculty of Electrical Engineering and Communication. Thus, after decades, the faculty had managed to concentrate all its capacities at a single VUT – Brno sever campus.

The University Institute of Forensic Engineering organized EXFOS 2014, a 23rd international Research Conference of Forensic Engineering. A major part of it was concerned with a topical issue of pedestrian visibility.

ACHIEVEMENTS AND AWARDS

Prof. Ing. Jan Maxmilián Honzík, CSc. received ▷ the 2013 City of Brno Prize for technical sciences from the Brno mayor in a ceremony at the Brno New City Hall.

In March 2014, a Biotechnology and Biomaterials group of the Centre of Materials Research received an award in a Czech Innovations competition. The Bioplast PHA technology is also successfully transferred to industrial production. Under the trademark of HYDAL Biotech, this organic material will be produced on an industrial scale in a new industrial plant at Suzhou, China. This transfer of Czech technology abroad has a number of unique features for which it has received the prestigious Frost & Sullivan's 2014 Technology Innovation Award

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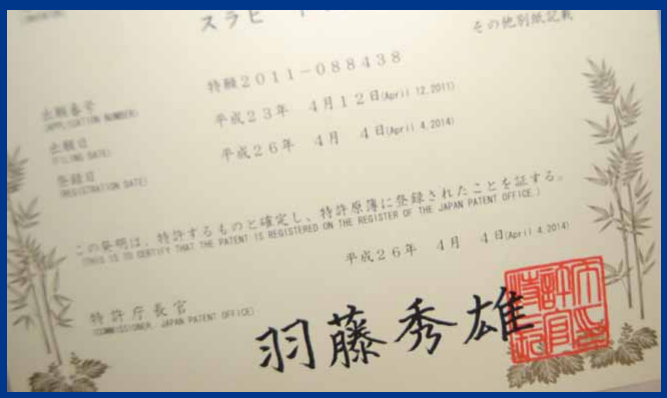

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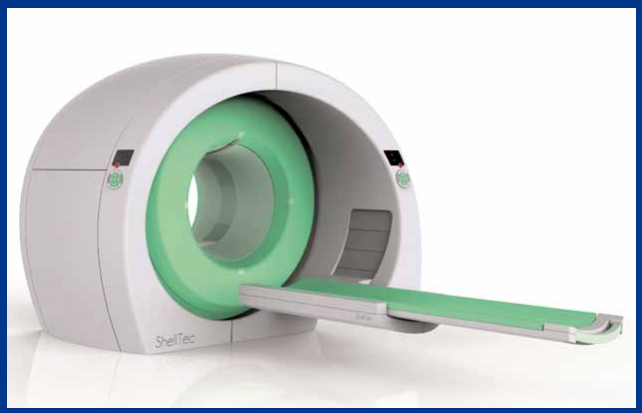
With its unique holographic microscope solution, a research group led by Professor Radim Chmelík from the Institute of Physical Engineering won the first prize of the The Most Significant Development and Innovation Result category of the Werner von Siemens Prize competition. The invention had already obtained a Japanese patent in 2014, this being the first protection of a BUT employee patent in the Japanese marketplace.

The invention of a jet system for generating plasma in liquids has become the hundred-and-fifth patent application at the BUT Centre of Technology Transfer.

Led by Prof. Miroslav Druckmüller, a team of researchers from the Faculty of Mechanical Engineering published an article, which won an international renown by being included in the editor's choice of the journal Science.

Photo © 2013 P. Štarha, K. Molnár, S. Habbal © 2014 M. Druckmüller



Immediately after graduating from the Faculty of Mechanical Engineering, Gabriela Ronzová won a prize in the prestigious Red Dot Award 2014 with her design of a Shelltec computer tomograph.

A new intelligent lubrication system of the flanges of rail vehicles, which eliminates unpleasant noise, and automatically calculates the lubricant doses using GPS data, was developed by scientists from the Institute of Design at the Faculty of Mechanical Engineering.

One of the most important scientific achievements at the Faculty of Information in 2014 was the design of an FPGA-based platform for filtering the up to 100/Gbs network operation. Thanks to the unique filter architecture, the platform can provide more network security and be used for legal monitoring.

STUDENTS

BUT designed a new student Design.S competition. To be held biennially, the international event has the ambition of presenting the best of the student design across universities and countries. ▷

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David Korsa, a BUT architecture student, took one of the first places in the South Moravian Region 2013 Construction competition. He submitted a non-traditional project of a Jewish Moravian museum in Brno.

◁ For the first time, BUT students could vote to choose the best BUT teacher in Bachelor's and follow-up Master's programmes.

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Student of the Faculty of Information Technology Jakub Sochor won Use of Mobile or Cloud Technologies in Software Development category, of the 9th annual competition of degree projects on information and communication technologies. The event was traditionally organized by ICT UNIE, this time in cooperation with the Banking Institute and University in Prague.

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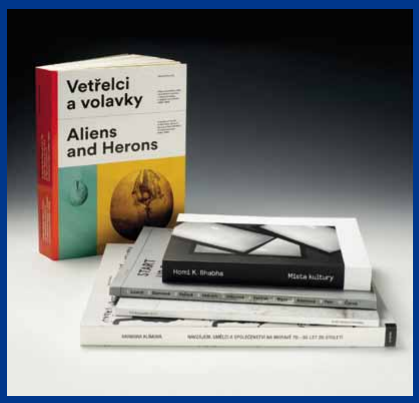
The silver medal for synchronized swimming went to BUT students Daniela Kincová and Denisa Hrubá at the Masters Wold Championship in Montreal.

The year 2014 was exceptionally successful for the graphical designers from the Faculty of Fine Arts. The first prize in the scientific and professional literature category of the Most Beautiful Czech Books competition was given to the book, Intruders and Agents Provocateurs, with the graphical design done by Tereza Hejmová, a teacher at the Graphical Design Studio. Graduates from the Faculty of Fine Arts were also successful in the National Prize for student design of 2014 competition. The prizes of the Excellent Student Design category went to Petra Roubalová and Matěj Hanauer for their graphical design of invitations for the Galerie TIC, and the same award was also won by Anna Štysová for her degree publication titled It is Necessary.. ▷



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For his Woodconstruction Under a Green Bridge, Jaroslav Pospíšil from the Faculty of Civil Engineering took the first place in the Wood Scented Constructions of 2014 competition. His degree project is concerned with a kindergarten building connected with a nursery unit in combination of unusual technical requirements and was praised for its perfect design and safe use.

◁ Graduating from the Faculty of Electrical Engineering and Communication in electrical engineering, electronics, communication, and control technology, Jan Král received the Prize of the Minister of Education for 2014. The successful graduate also won a Siemens prize for the best degree project of 2014, on which he worked under the supervision of Michal Kubíček and David Bělohrad.

◁ Two doctoral students Ondřej Chybík and Michal Krištof managed to win an international competition for the Czech Republic pavilion at the EXPO 2015 in Milan, Italy. The project and installation preparations for the EXPO modular system took one year with the opening ceremony planned for 1st May 2015.

ANNIVERSARIES

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◁ The most important of the year was the 115th anniversary of the Brno University of Technology celebrated throughout the year with a special meeting of the BUT Scientific Board as its highlight. Here, honorary doctorates were conferred upon Prof. Ing. Armin Delong, DrSc., and Ing. arch. Viktor Rudiš. Also the Faculty of Civil Engineering marked its anniversary at a special meeting of the academic community on 19th October.

◁ Twenty years before the academic year 2013/2014, full-time design courses started to be offered at the Industrial Design Department of the Institute of Machine and Industrial Design of the Faculty of Mechanical Engineering and, ten years after that, the first exhibition of degree projects was held at the Brno Technical Museum.

◁ Helping the BUT staff reconcile their professional ambitions with parental duties, a technical mini-kindergarten marked its first anniversary in the reconstructed buildings of the Faculty of Electrical Engineering and Communication at the Technická campus.

SIGNIFICANT PROJECTS

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CEITEC – CEITEC is a project of Brno universities and research institutions (Brno University of Technology – 36% participation, Masaryk University, Mendel University, University of Veterinary and Pharmaceutical Sciences Brno, Institute of Physics of Materials of the Czech Academy of Sciences, and Veterinary Research Institute), who have joined efforts to create a leading European research institute focusing on organic nature sciences and advanced materials and technologies. Its principal aim is to build a major European centre of science and education providing top services for the best researchers. Its achievements will help improve the quality of human life and health. Launched in 2011, CEITEC's first stage will be finished in 2015. | In 2014 work continued on building CEITEC's infrastructure with tenders invited for the supply of devices and technology to be finished in 2015. | CEITEC continues to follow the set trend of internationalization and commercial cooperation. It is successful in launching cooperation with Europe's and overseas prestigious institutions such as Karolinska Institutet, Sweden, University of Maryland and Johns Hopkins University, USA, and the RIGAKU company, Japan, promoting the existing cooperation with international partners on joint research and development projects. | A major outcome of international cooperation is a paper written in cooperation with a team led by Professor Tomáš Šikola, Atomic-Scale Observation of Multiconformational Binding and Energy Level Alignment of Ruthenium-Based Photosensitizers on TiO2 Anatase. It was published in 2014 by Nano Letters. Apart from doc. Jan Čechal from the "Preparation and Characterization of Nanostructures" research group, also researchers from the Max Planck Institute for Solid State Research, University of Oxford, ETH Zurich, EPFL and Justus Liebig University Giessen participated in writing t5he article. | A major success achieved by the CEITEC researchers from Professor Jozef Kaiser's group is a gold medal of the 2014 International Machine Fair for the technology, rLIBS mobile laboratory for remote chemical analysis, which is the outcome of an RDI (pre-seed) project. | Another important advancement in international cooperation is further success in winning international grants from the year 2013. For example, Dr. Michal Urbánek from the Preparation and Characterization of Nanostructures research group, together with colleagues from TU Wien, won a joint grant, Production of Magnetic Meta-Materials through Direct Storing by Focused Ion Beam. Another important international cooperation project is one of the EU EMC2 projects (Embedded Multi Core systems for Mixed Criticality applications in dynamic and changeable real time environments), with researchers from Professor Pavel Václavek's group being involved in it. More than 20 grant applications were submitted in 2014 by CEITEC researchers for the Horizon 2020 scheme. | 21 doctoral students were admitted to the first year of a CEITEC interuniversity programme. There are now fifteen second-year doctoral students. In line with the adopted strategy of admitting to study excellent research-oriented applicants, CEITEC started a recruitment campaign for another study year.

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IT4Innovations Centre of Excellence – is a unique project to build a national centre of research excellence in information technology. Being almost finished and in operation, the centre will help concentrate a number of IT-related fields of research to accelerate their development. As part of the project, a superpower computer is to be installed in Ostrava in mid 2015, ranking among the world's 100 most powerful computers by that time. Already in mid 2013, an Anselm supercomputer was put in operation in Ostrava. Funded from the project, too, it is currently the most powerful computer in the Czech Republic. The project is being jointly prepared by: VŠB – Technical University of Ostrava, University of Ostrava, Silesian University in Opava, Brno University of Technology (exclusively by the Faculty of Information Technology – FIT), and Institute of Geonics AS CR in Ostrava. The IT4Innovations centre of excellence should serve as an academic research centre as well as a centre of applied research and contracted cooperation with the commercial sphere. The research at the centre focusing on computing will be placed in Ostrava while that concerned with imbedded systems and speech and image processing will be based in Brno. The IT4Innovations project was approved by the European Commission on 21st June 2011. The bulk of its funding goes to Ostrava and its smaller part is implemented in Brno. From the beginning of the project, the Brno building was being constructed and equipped at the campus of the BUT Faculty of Information Technology (FIT) and finished in 2013. As part of the project's start-up, the selected staff was hired and the project meets the monitoring criteria according to the plan. To cope with the implementation of IT4Innovations, FIT established its own Research Centre of Information Technology (RCIT) in the new building. This was necessitated by the ever increasing number of projects implemented at FIT. Its primary purpose is to manage most of the faculty's projects. Thus, the RCIT integrates in itself the human and spatial resources and equipment required for the envisaged activities. The building is well equipped for good application research and development. It has ample and flexible room for researchers and developers, offering computing equipment adequate to meet the aims and objectives foreseen providing a link with the supercomputer in Ostrava, conference rooms for video and other conferences and meetings as well as the necessary service. The vicinity of the faculty's other teacher and student rooms provides RCIT with the necessary support resulting in a synergy of the academic and commercial spheres. The RCIT resources are ready and in most cases intended for cooperation with external third parties. Emphasis is on cooperation on joint research projects with FIT and it is expected that, after the project's start-up phase, this cooperation will provide the bulk of its funding. | Already during construction, negotiations were conducted with the stakeholders to know their precise requirements and sign agreements, so that when the building is put into operation, we do not start using it from scratch – most of its parts have already been contracted. However, we are still open to negotiations with those interested in the intended activities especially those with a considerable potential of contracted research.

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AdMaS – Advanced Materials, Structures and Technologies research centre is part of the Faculty of Civil Engineering focusing on research, development, applications of advanced building materials, structures, and technologies (not only) in civil engineering, but also in transportation systems, as well as town and landscape infrastructure. Started in 2011 the building of AdMaS was successfully finished by 31st December 2014. In the first quarter of 2015 the new site at Purkyňova 139, Brno was put into operation. The project's total costs reached 822 million CZK including 292 million CZK in construction costs. From the sustainability point of view, it is important that, in 2014, the centre was successful in the 3rd round of the National Sustainability Programme public competition. Nineteen newly created centres submitted their projects in the third call. In this intense competition, AdMaS took the 4th place. For the next five years, it will receive 143,011,000 CZK in sustainability support from the National Sustainability Programme. In 2014 the centre significantly exceeded most of the required monitoring indicators. There were 116 publications instead of the required 30, 29 applied-research results rather than 9, and 41.41 million CZK was received in national grant funding with the prescribed figure being 19.5. Despite the on-going structural crisis in civil engineering, 19.71 million CZK were received in contracted research, which is a value well within the tolerance limits. For more details on the centre activities, see www.admas.eu.

NETME Centre – The centre of new technologies for mechanical engineering was established in 2010 as the first Brno project to receive funding from the EU structural funds. With the initial investment of 30 million EUR, it ranks among middle sized centres of the Czech Republic. Its activities are based on long research and development work of a number of research teams of the Faculty of Mechanical Engineering. It is divided into five divisions: Power Engineering, Processes, and Environment; Mechatronics; Virtual Design and Testing; Aviation and Automotive Engineering; and Progressive Metal Materials). | For a long time, the Centre has been meeting and exceeding the monitoring indicators, including the numbers of impacted publications, applicable research results, numbers of students involved, etc. Enormous success has been notched up in cooperation with the application sphere with the proportion of contracted research increased by tens of percentage points every year. Important partners include domestic firms such as Škoda AUTO, a. s., První brněnská strojírna Velká Bíteš, a. s., Honeywell, s. r. o., ČEZ a. s., and Aircraft Industries, a. s., as well as partners from abroad (Voestalpine Stahl, Volkswagen AG, AMAG Rolling, Andritz Selas, and ArcelorMittal). | In the public targeted support area the centre has been successful in winning a number of research projects. For example, over thirty teams have been working on TAČR projects and two centres of competence have been established. A convincing indicator of success is also involvement in four EU framework programmes. In 2014, the proportion of targeted support of the total centre

funding was one-third, which is significantly higher proportion that planned by the RDI operative programme. | Within the National Sustainability Programme, major changes were made in 2014 in the centre's management and funding structure. Especially thanks to a major increase of personal costs, a number of new researchers could be employed. As a consequence, a strategic decision was made to establish a functioning project and development office to support the winning of both targeted and international contracted research. These changes should help achieve the centre's long-term vision to become a fully fledged research partner on international scale by 2020.

SENSOR, INFORMATION, AND COMMUNICATION SYSTEMS (SIX) centre – In 2014, for the first time, the centre was run without direct financial support from public resources. Compared with 2013, the number of full-time jobs rose from 70 to 110, the number of Master's graduates increased from 43 to 135, and the number of doctoral students from 14 to 23. The income from research orders rose from 5.24 million CZK in 2013 to 7.30 million CZK in 2014. Concerning national and international grants, the income of 31.6 million CZK in 2013 increased to 46.7 million CZK in the following year.

Within the National Sustainability Programme, the SIX Centre submitted the project, Interdisciplinary Research of Wireless Technologies (INWITE), with five of its centres jointly headed by Centre SIX professors in tandem with professors from the Technical University of Vienna. As part of HORIZON 2020, the same team submitted the project, Advanced Wireless Technologies for Clever Engineering (ADWICE), which, if successful, will be implemented by Czech and Austrian teams from 2015 to 2022.

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Centre of Research and Use of Renewable Energy Sources (CRURES) – In 2014, the Centre continued its research and development activities. It concentrates major research, development, and innovation resources for work on a wide range of issues related to renewable energy sources. The research team members are concerned with issues of chemical and photovoltaic energy resources, electromechanics, electrical technology, power engineering, electric drives, mobile robots and industrial electronics. | In 2014, CRURES focused on five major research areas:

- Optimization of electromechanical conversion of energy
- Chemical and photovoltaic energy resources
- Production, transmission, distribution, and use of electric energy
- Automation and sensor technology
- Research of switch-off process in switching devices.

A major funding resource for the Centre in 2014 was the National Sustainability Programme (NSP) project, Energy in conditions of sustainable development (EN PUR). | Apart from basic research, the Centre is also concerned with improving the cooperation of the faculty with the application sphere and acceleration of the transfer of new technologies to industrial practice. All CRURES laboratories form a unique infrastructure, which will no doubt attract major industrial partners, whose production is closely related to the research carried out in the Centre. | In 2014, Centre researchers participated in the development of the MARABU experimental aircraft with electric drive, which was presented at the Brno International Engineering Fair. The aircraft flew for the first time on 20th August 2014 and stayed 27 minutes in the air. | One of the most useful exhibits of the AMPER 2014 fair was a construction series of compact driving axles of light vehicles with electric drives developed by EVEKTOR, spol. s r.o. A significant participant in this achievement awarded a GOLDEN AMPERE prize was a CRURES research team led by doc. Pavel Vorel. | A significant part of the Centre are a laboratory of switching devices and a laboratory of high voltage, situated in the Professor List Technology Park. In these strategically important laboratories, research is carried out of heavy-current and high-voltage electric devices and equipment. The equipment of the laboratories makes it possible to simulate, for example, extreme short-circuit conditions in the mains, transmission line struck by a lightning, etc. The unique equipment and resources of these laboratories attract many industrial enterprises. Contracted-research orders come from such industrial giants as SIEMENS, ABB, EATON, as well as from smaller domestic (DRIBO) and foreign companies (SEZ Krompachy Slovakia, Techna Ltd. United Kingdom, Schaltbau, Austria). In 2014 the laboratories received almost 5 million CZK in contracted research. For more information on the CRURES activities and focus, see www.cvvoze.cz.

Centre of materials research – The regional Centre of Materials Research (CMR) as part of the BUT Faculty of Chemistry has been in full operation since 1st January 2014. Thanks to a start-up project, a research centre was built equipped with state-of-the-art technology closely cooperating with firms producing inorganic binders, advanced organic materials and biomaterials. | The centre's advantage is an interdisciplinary team of experts in chemical and structural analysis, physical chemistry, biotechnology, and biochemistry, physics, inorganic and organic synthesis. | Being established via a project of the RDI Operative Programme, the centre received more than 200 million CZK in instrumental equipment and research services financed both from the EU and national funds. The EU part of the subsidy covered more than 60 devices, many unique in the Czech Republic as well as in the Central and Eastern. | Although still in the initial stage, the project has already made several very important discoveries, which may be seen as forerunners of sustainability after spending the EU money in late 2013. Already today, the centre provides over 50 companies with contracted research. The project engages more than 70 researchers, who are supervisors of tens of Bachelor's and Master's projects, and doctoral theses. The CMR infrastructure is used by over 100 students. | A remarkable discovery was achieved by a team of experts led by doc. Ivana Márová, who have found a

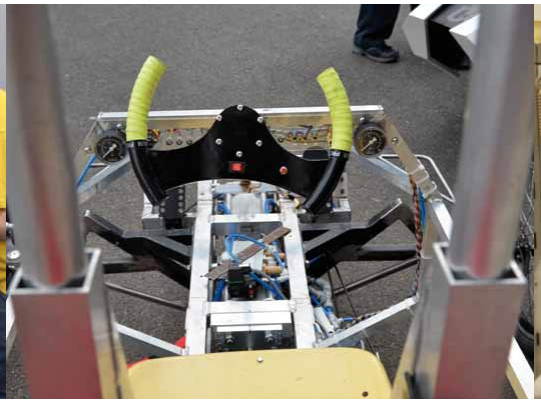
way of utilising waste oil turning it into biodegradable bioplastic. By way of an example, an empty water bottle made of such plastic can be just thrown into a waste bin or compost heap letting nature do its job quickly. The licence for the bioplastic production technology has already been sold successfully and is heading for the Asian markets. National University of Singapore, one of Asia's most prestigious universities, and its centre of nanotechnologies have joined the team for cooperation. | A team of Professor Miloslav Pekař conducts basic and applied research of biocolloid systems focussing on their use in medicine, pharmacy, cosmetics, and environment protection. It is particularly research of the use of the hyaluronic acid for healing wound-dressings that offers a huge commercial potential. | Other research teams are concerned with research of advanced organic materials. With their work in electronics and photonics, a research team of doc. Martin Weiter was very successful in implementing large EU projects cooperating with such companies as Merck, Phillips, and Fiat.| Also, activities of experts about Professor Jaromír Havlica concerned with use of secondary raw materials especially from power and metallurgical industries contributed to linking application and research sphere. In 2014, they set up strategic partnership with the ČEZ company. CMR's main objective is to accelerate the transfer of knowledge and technology to practice. The results achieved by CMR in a relatively short time show that spending the money received in funding on state-of-the-art devices, human resources, and future of students of materials science is the right way of meeting the challenges of innovative society. For more information on the activities and focus of CMR, see: www.materials research.cz/cz/.

TAČR TA02011368 – Light roofs – The TAČR research project, Systems against the overload of light roof structures by climatic load, which is currently worked on at the Institute of Concrete and Masonry Structures in cooperation with ÚAM Vítkovice is focused on the highly topical issues of securing a reliable operation of the existing light large-span roof structures (LRS). These are mostly buildings of considerable economic and social importance (production halls, arenas, exhibition halls, etc.) built in the last century that, for many reasons, may no longer reliably serve their purposes. In extreme cases, considerable material damage may be inflicted or human live lost. For this reason, the project develops modern systems actively monitoring LRS to secure their safe operation, which would otherwise be not possible due to the current EU standards. Using the active-risk-control mode, a user can run a construction safely while obtaining early warnings of roof-structure overload and being able to undertake timely measures to reduce the existing load (by reducing the number of persons, removing excessive snow, etc.). As a result, the contractor can achieve significant economy, as the existing unsatisfactory LRS need not be redeveloped or taken down with considerable costs. The monitoring system developed has already been implemented for the roof structure of the former Pavilion D of the Brno exhibition ground and for the airport buildings at Ostrava Mošnov. With their low prices, the systems may find wide application both in the Czech Republic and abroad.

△

BUT Experimental Aircraft – In late 2009, the Institute of Aerospace Engineering (IAE) at BUT finished work on the VUT 001 Marabu experimental aircraft. In 2010 then, a successful test flight and a number of flight measurements were carried out. The first testing phase was finished in August 2011. Based on the project outcomes, effective industrial cooperation started. | In 2013, the Institute of Aerospace Engineering and his industrial partner, První brněnská strojírna Velká Bíteš, finished and test flew a VUT 061 Turbo experimental aircraft powered by a new TP-100 turbine engine developed by PBS Velká Bíteš. The basis for the design of VUT 061 was the design of the original VUT 001 Marabu. The aircraft is used as a flying laboratory for the construction of a new drive unit and is further used by the industrial partner, PBS Velká Bíteš (with a support by the IAE). | In 2014, another experimental aircraft, VUT 051 RAY, was successfully test flown with an electric drive unit. Thus the efforts to develop novel drive units for aviation copy the development in automotive industry. The Department of Power Electrical and Electronic Engineering and JIHLAVAN airplanes significantly participated in designing the aircraft. The design of VUT 001 Marabu again served as a base for the new aircraft.

Creating nanostructures for studying the nanoworld – The dust-free laboratories of the Institute of Physical Engineering of the BUT Faculty of Mechanical Engineering are used to create and characterize nanostructures for studying physical phenomena of the nanoworld environment. The study of such structures gives rise to new branches of physics such as plasmonics and spintronic. They are being diagnosed not only in the above-mentioned dust-free laboratory, but also at cooperating institutions abroad such as Imperial College and Laboratoire Louis Néel in Grenoble, France. In this connection, the institute worked on projects such as the MSM0021630508 Plan, Centre of basic research (LC06040), and a project of the Nanotechnology For Society programme or new projects such as the 7th Framework EU project, UNIVSEM, and the AMISPEC Centre of Competence in cooperation with leading domestic and international institutions and firms (above all Brno-based TESCAN). Work on the above projects formed a team on over 25 doctoral students and young scientists publishing papers in top impacted journals such as Nature Nanotechnology and Nano Letters. Students also take part in the research of nanostructures by work on their own projects of the IMPI Science for Competitiveness Operative Programme coordinated by the institute funded by the industrial fund every year providing 14 junior projects with 750,000 CZK in funding.



BASIC DATA ON THE UNIVERSITY

a) Full name of the public higher-education institution, acronym used, addresses of all its parts

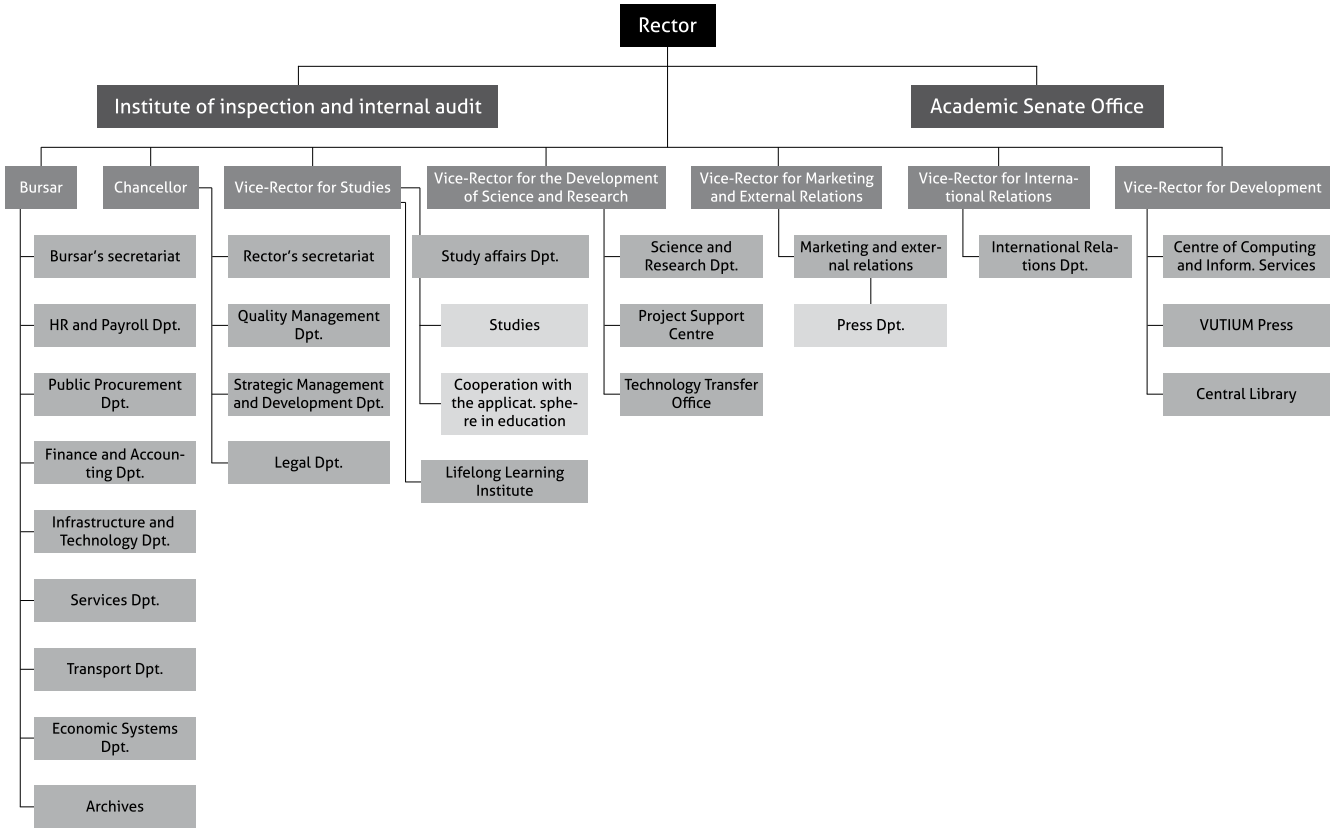
Faculties

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, Technická 3058/10, 616 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, Technická 3058/10, 616 00 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, Údolní 244/53, 602 00 Brno, http://www.usi.vutbr.cz

b) BUT Organizational Chart



c) BUT Scientific Board, Managerial Board, Academic Senate

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prof. RNDr. Ing. Petr Štěpánek, CSc.	Rector, Brno University of Technology
doc. Mgr. Irena Armutidisová	Vice-Rector, Brno University of Technology
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Ing. Pavel Maxera
Libor Zvěřina

d) BUT representatives in the representation of universities

CZECH RECTORS' CONFERENCE
prof. RNDr. Petr Štěpánek, CSc., rector of BUT, member of CRC

BUT REPRESENTATIVES IN THE COUNCIL OF HIGHER EDUCATION INSTITUTIONS
from 1st January 2014 to 17th November 2014
doc. Ing. Eva Münsterová, CSc. , CHEI board member
RNDr. Vlasta Krupková, CSc. CHEI assembly member for BUT
prof. RNDr. Milada Vávrová, CSc. CHEI representative in the Academic Senate of the Academy of Sciences of CR
Ondřej Peňák, CHEI Chamber of Students
Ing. Petr Dvořák, CHEI Chamber of Students (stand-in)

from 18th November 2014 to 31st December 2014
RNDr. Pavel Popela, Ph.D. CHEI board member
Ing. Jan Roupec, Ph.D. CHEI assembly member for BUT
prof. RNDr. Milada Vávrová, CSc. CHEI representative in the Academic Senate of the Academy of Sciences of CR
Ing. Pavel Maxera, CHEI Chamber of Students
Ing. et Ing. Michaela Fiedlerová, CHEI Chamber of Students (stand-in)

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

e) Concise description of BUT mission, vision, and strategic goals

As a major higher-education institution in the Czech Republic, Brno University of Technology makes every effort to be an excellent university, particularly in the main mission areas, that is, education, research, cooperation with the practical sphere, and in social sphere.

BUT will continue to maintain and strengthen the position of a major technical university both at home and in the EU. In education and research, it will continue to be a reliable partner for universities In Europe and in the world. Continual improvement of the educational standard, which uniquely connects engineering, arts, and business, creates an environment attractive for students, outstanding experts, and scientists. An important aspect is accredited programmes, which will continue to be of high quality with tendencies towards improvement.

In science, research, and innovations, BUT will strive for even better cooperation with the application sphere, including the public one, continuing to provide conditions favourable for the growth of innovation potential, artistic, and other creative activities, transfer of technologies and knowledge for society.

BUT sees its future also in promoting cooperation with similar universities in the Czech Republic Europe, and in the world.

f) Amendments to BUT internal regulations in 2014

Amendment to payroll regulation – Addendum no. 2 registered on 20.08.2014.

g) Providing information under Act no. 106/1999 Coll., concerning free access to information

- number of requests for information and number of requests rejected: 4 requests for information, one rejected (3 requests granted and information provided)
- number of appeals against rejection: 0
- copies of substantial parts of court decisions concerning the lawfulness of the rejection requests for information by the obligor and a list of expenses incurred by the obligor in connection with court proceedings concerning the rights and duties under this law, including pays to its employees and legal fees: NA – no proceeding.
- number of exclusive licenses granted, including the justification of the exclusive license provision: 0
- number of complaints filed pursuant to Section 16a, reasons for submissions and concise description of dealings with such complaints: 0
- further information related to applying this law: NA

13 14 15 16 17 18 19 20

DEGREE PROGRAMMES, STUDY ORGANISATION, AND EDUCATION

a) Accredited degree programmes (numbers in master groups according to study type and form) listed by faculty or other constituent parts offering an accredited degree programme or its part

Table 3.1: Accredited degree programmes (numbers)*

BUT		Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
		FT	C	FT	C	FT	C		
Faculty of Architecture									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	1	0	0	0	1	0	1	3
Faculty of Electrical Engineering and Communication									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	4	1	0	0	2	1	2	10
Faculty of Chemistry									
Accredited degree programme groups	Master Code								
natural sciences and disciplines	11-18	0	0	0	0	0	0	2	2
technical sciences and disciplines	21-39	2	2	0	0	5	4	3	16
Faculty of Information Technology									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	1	0	0	0	1	0	1	3
Faculty of Business and Management									
Accredited degree programme groups	Master Code								
economy	62,65	3	2	0	0	2	1	1	9
Faculty of Civil Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	4	2	0	0	3	1	2	12
Faculty of Mechanical Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	2	1	0	0	4	1	6	14
Faculty of Fine Arts									
Accredited degree programme groups	Master Code								
artistic and cultural sciences and disciplines	81,82	1	0	0	0	1	0	1	3
Institute of Forensic Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	2	0	2	4
Central European Institute of Technology BUT									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	2	0	2	4
Total		**18**	**8**	**0**	**0**	**23**	**8**	**23**	**80**

b) Degree programmes taught in a foreign language by faculties or other constituent parts offering an accredited programme or part thereof

Table 3.2 Programmes taught in a foreign language (numbers)

BUT		Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
		FT	C	FT	C	FT	C		
Faculty of Architecture									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	1	0	0	1
Faculty of Electrical Engineering and Communication									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	1	0	0	0	1	0	2	4
Faculty of Chemistry									
Accredited degree programme groups	Master Code								
natural sciences and disciplines	11-18	0	0	0	0	0	0	4	4
Faculty of Information Technology									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	2	2
Faculty of Business and Management									
Accredited degree programme groups	Master Code								
economy	62,65	0	0	0	0	1	0	2	3
Faculty of Civil Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	1	0	0	0	1	0	2	4
Faculty of Mechanical Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	2	0	0	0	3	0	2	7
Faculty of Fine Arts									
Accredited degree programme groups	Master Code								
artistic and cultural sciences and disciplines	81,82	0	0	0	0	0	0	0	0
Institute of Forensic Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0
Central European Institute of Technology BUT									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	1	1
Total		**4**	**0**	**0**	**0**	**7**	**0**	**15**	**26**

*Note: * = faculty or part of a university offering an accredited programme*
FT = full time
C = combined/distance

c) Joint/Double/Multiple degree programmes

Table. 3.3: Joint/Double/Multiple Degree Programmes

Brno University of Technology, Faculty of Mechanical Engineering	
Title of degree programme 1	Production Systems
Partner organizations	Technische Universität Chemnitz (Chemnitz, Germany)
Adjoined organisations	
Beginning	
Programme category (Joint/Double/Multiple Degree)	Double Degree
Length of study (semesters)	2
Programme type (Bachelor's, follow-up Master's, Master's, doctoral)	follow-up Master's
Programme description including admissions and completion	Production systems 1 – one-year of study in Czech, one-year of study in German
What diploma and diploma appendix are issued and how?	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	Student exchange within an Erasmus programme for one academic year
Title of degree programme 2	Industrial Engineering
Partner organizations	Art et Métiers ParisTech (Cluny, France)
Adjoined organisations	
Beginning	2006
Programme category (Joint/Double/Multiple Degree)	Double Degree
Length of study (semesters)	2
Programme type (Bachelor's, follow-up Master's, Master's, doctoral)	follow-up Master's
Programme description including admissions and graduation	Industrial engineering – one-year of study in Czech and one-year of study in French. A student from the general Bachelor's programme of "Mechanical Engineering" can be admitted for Industrial Engineering 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 and how?	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	Student exchange within an Erasmus programme for one academic year

Table. 3.3: Joint/Double/Multiple Degree Programmes

Brno University of Technology, Faculty of Business and Management	
Title of degree programme 1	Economics and Management, field: European Business and Finance
Partner organizations	Nottingham Trent University (GB), Karol Adamiecki Economic University, Katowice, Poland, Brno University of Technology (CZ)
Adjoined organisations	
Beginning	Academic year of 2007/2008

Programme category (Joint/Double/Multiple Degree)	Joint Degree
Length of study (semesters)	4
Programme type (Bachelor's, follow-up Master's, Master's, doctoral)	follow-up Master's
Programme description including admissions and graduation	Conditions of admission: completed similar Bachelor's programme, passing a written entrance exam.
What diploma and diploma supplement are issued and how?	The graduates will receive the first degree of Master of Science (MSc.) issued by Nottingham Trent University after successfully completing all courses required by the programme, they receive a second degree of "inženýr" (Ing.) universities, after successfully completing all the required courses and passing a final state examination.
Student mobility type	Study stay is required at the Nottingham Trent University (GB) in 3rd semester.

d) Accredited degree programmes offered in cooperation with another university seated in the Czech Republic (degree programme title (including master group) and name of the cooperating institution) (Table 3.4)

Table. 3.4 Accredited degree programmes offered in cooperation with another university

Brno University of Technology, Faculty of Electrical Engineering and Communication	
Title of degree programme 1	Biomedical Technology and Bioinformatics
Master group	B3930
Partner university	Masaryk University in Brno, Faculty of Medicine
Beginning	2007/2008
Length of study (semesters)	6
Programme type (Bachelor's, follow-up Master's, Master's, doctoral)	Bachelor's
Programme organisation including admissions and graduation	Regular full-time three-year study taking place at the Faculty of Electrical Engineering and Communication and MU Faculty of Medicine using the specialised departments of the Teaching hospital at Brno-Bohunice. For admission eligibility, the completion is required of a secondary school and meeting the BTBIO-A admission rules. Completion – by presenting and defending a Bachelor's project and passing a state exam.
Title of degree programme 2	Biomedical Engineering and bioinformatics
Master group	N3952
Partner university	Masaryk University in Brno, Faculty of Medicine
Beginning	2010/2011
Length of study (semesters)	4
Programme type (Bachelor's, follow-up Master's, Master's, doctoral)	follow-up Master's
Programme organisation including admissions and graduation	Regular full-time two-year Master's degree study taking place at the Faculty of Electrical Engineering and Communication and MU Faculty of Medicine using the specialised departments of the Teaching hospital at Brno-Bohunice. For admission eligibility a Bachelor's degree is required and meeting the BTBIO-F admission rules. Completion – by presenting and defending a Master's project and passing a state exam.
Title of degree programme 3	Audio engineering
Master group	B3961

Partner university	JAMU in Brno, Faculty of Music
Beginning	2013/14
Length of study (semesters)	6
Programme type (Bachelor's, follow-up Master's, Master's, doctoral)	Bachelor's
Programme organisation including admissions and graduation	Full-time three-year Bachelor's study taking place at the BUT Faculty of Electrical Engineering and Communication and the Faculty of Music of Janáček Academy of Music. For admission eligibility, secondary or secondary vocational school graduation and the fulfilment of the admission rules for the AUDIO-J programme are required. Completion – by presenting and defending a Bachelor's project and passing a state exam.

e) Accredited degree programmes offered in cooperation with a Higher Education College

BUT does not offer such a degree programme.

f) Accredited degree programmes or their parts offered out of town

BUT does not offer such a degree programme.

g) Number of accredited degree programmes described by the teaching outcomes methodology in compliance with the National Qualifications Frame for tertiary education

BUT accredited degree programmes are currently in full compliance with the conclusions of the teaching outcomes methodology according to the National Qualifications Frame. In 2013, we regained the ECTS and DS Labels. The teaching outcomes have been acknowledged by the EC.

h) Brief description of the credit system

BUT holds the ECTS and DS Labels of 2009. In 2013, we regained both certificates. The assessment system used in all the degree programmes is compatible with ECTS (Local grades) certified by the ECTS Label in 2009. The information system allows for an internal conversion to the correct ECTS credit system.

STUDENTS

a) Students in accredited degree programmes (Table 4.1)

Table 4.1: Students in accredited degree programmes (numbers)

BUT		Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
		FT	C	FT	C	FT	C		
Faculty of Architecture									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	366	0	0	0	180	0	65	611
Faculty of Electrical Engineering and Communication									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	2.039	258	0	0	964	187	419	3.867
Faculty of Chemistry									
Accredited degree programme groups	Master Code								
natural sciences and disciplines	11-18	0	0	0	0	0	0	72	72
technical sciences and disciplines	21-39	716	62	0	0	146	58	116	1.098
Faculty of Information Technology									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	1.730	0	0	0	598	0	211	2.539
Faculty of Business and Management									
Accredited degree programme groups	Master Code								
economy	62,65	1.838	52	0	0	937	470	79	3.376
Faculty of Civil Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	3.652	318	0	0	1.451	104	457	5.982
Faculty of Mechanical Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	2.736	201	0	0	1.076	102	414	4.529
Faculty of Fine Arts									
Accredited degree programme groups	Master Code								
artistic and cultural sciences and disciplines	81,82	168	0	0	0	77	0	20	265
Institute of Forensic Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	509	0	101	610
Central European Institute of Technology BUT									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	36	36
Total		**13.245**	**891**	**0**	**0**	**5.938**	**921**	**1.990**	**22.985**

*Note: * = faculty or part of a university offering an accredited programme*
FT = full time
C = combined/distance

b) Students paying for their studies (Table 4.2)

Table 4.2: Students paying for their studies ** (numbers)

BUT		Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
		FT	C	FT	C	FT	C		
Faculty of Architecture									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0
Faculty of Electrical Engineering and Communication									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	4	4
Faculty of Chemistry									
Accredited degree programme groups	Master Code								
natural sciences and disciplines	11-18	0	0	0	0	0	0	0	0
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0
Faculty of Information Technology									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0
Faculty of Business and Management									
Accredited degree programme groups	Master Code								
economy	62,65	0	0	0	0	26	0	0	26
Faculty of Civil Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	3	0	0	0	0	0	0	3
Faculty of Mechanical Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	1	0	0	0	0	0	2	3
Faculty of Fine Arts									
Accredited degree programme groups	Master Code								
artistic and cultural sciences and disciplines	81,82	0	0	0	0	0	0	0	0
Institute of Forensic Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0
Central European Institute of Technology BUT									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0
Total		**4**	**0**	**0**	**0**	**26**	**0**	**6**	**36**

*Note: * = faculty or part of a university offering an accredited programme*
*Note: ** = the numbers of these students are not included in reports determining the state-budget subsidy for education*
FT = full time
C = combined/distance

c) Students over 30 years of age (Table 4.3)

Table 4.3: Students over 30 years of age

BUT		Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
		FT	C	FT	C	FT	C		
Faculty of Architecture									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	4	0	0	0	3	0	30	37
Faculty of Electrical Engineering and Communication									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	7	64	0	0	2	50	126	249
Faculty of Chemistry									
Accredited degree programme groups	Master Code								
natural sciences and disciplines	11-18	0	0	0	0	0	0	7	7
technical sciences and disciplines	21-39	2	11	0	0	0	15	30	58
Faculty of Information Technology									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	5	0	41	46
Faculty of Business and Management									
Accredited degree programme groups	Master Code								
economy	62,65	1	16	0	0	3	78	25	123
Faculty of Civil Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	3	102	0	0	5	31	144	285
Faculty of Mechanical Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	4	48	0	0	3	30	120	205
Faculty of Fine Arts									
Accredited degree programme groups	Master Code								
artistic and cultural sciences and disciplines	81,82	7	0	0	0	8	0	16	31
Institute of Forensic Engineering									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	9	0	51	60
Central European Institute of Technology BUT									
Accredited degree programme groups	Master Code								
technical sciences and disciplines	21-39	0	0	0	0	0	0	2	2
Total		**28**	**241**	**0**	**0**	**38**	**204**	**592**	**1.103**

*Note: * = faculty or part of a university offering an accredited programme*
FT = full time
C = combined/distance

d) Dropouts from accredited degree programmes

Table 4.4: Dropouts from accredited degree programmes (numbers)

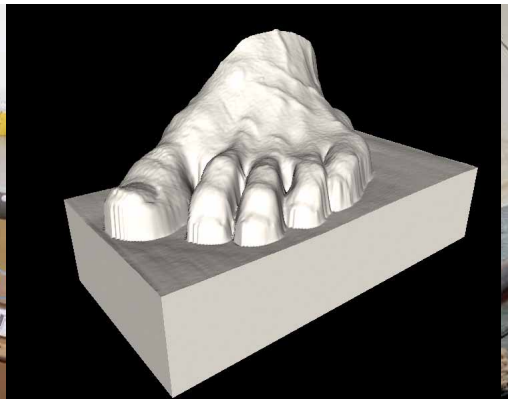
BUT	Master Code	Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
Accredited degree programme groups		**FT**	**C**	**FT**	**C**	**FT**	**C**		
natural sciences and disciplines	11-18	0	0	0	0	0	0	5	5
technical sciences and disciplines	21-39	2.354	481	0	0	490	121	246	3.692
economy	62,65	276	12	0	0	116	94	15	513
artistic and cultural sciences and disciplines	81,82	11	0	0	0	9	0	2	22
Total		**2.641**	**493**	**0**	**0**	**615**	**215**	**268**	**4.232**

FT = full time
C = combined/distance

e) Measures to reduce the number of dropouts

In difficult courses such as mathematics and physics, BUT offers supplementary courses and consulting for students.

14 15 16 17 18 19 20 21 2



GRADUATES

a) Graduates from accredited degree programmes

Table 5.1: Graduates from accredited degree programmes (numbers)

BUT	Master Code	Bachelor's study		Masters study		follow-up Master's study		Doctoral Study	Total
Accredited degree programme groups		**FT**	**C**	**FT**	**C**	**FT**	**C**		
natural sciences and disciplines	11-18	0	0	0	0	0	0	5	5
technical sciences and disciplines	21-39	2.215	107	0	0	1.898	146	172	4.538
economy	62,65	497	19	0	0	328	164	9	1017
artistic and cultural sciences and disciplines	81,82	39	0	0	0	44	0	3	86
Total		**2.751**	**126**	**0**	**0**	**2.270**	**310**	**189**	**5.646**

FT = full time
C = combined/distance

b) Cooperation with BUT graduates

BUT cooperates and keeps in contact with graduates through the portal, www.vutbr.cz/absolventi. Here, information can be found on the successful graduates, results of regular enquiries among graduates, databases of graduates and degree projects, jobs offered, cultural and sports events at BUT, etc. Alumni are informed here on life at BUT through a VUTARIUM newsletter. For its members, a club of alumni and friends of the Faculty of Electrical Engineering and Communication regularly organises lectures and meetings, consulting, and various cultural events. With a plan, a SAFAST alumni club was established at the Faculty of Civil Engineering. Also the remaining faculties have long been cooperating with their graduates on projects, degree projects, staff recruitment, and educational programmes.

c) Graduate employment surveys

Every two years, BUT carries out graduate employment surveys and, occasionally, surveys on employers of BUT graduates. The last survey among graduates was carried out in 2013 collecting data from the 2011 and 2012 follow-up Master's graduates. The next survey will take place in 2015 (2013 and 2014 graduates).

d) Cooperation with the future employers of BUT graduates

The university organizes a number of events at which students meet and are informed by representatives from companies on job and career opportunities. BUT regularly takes part in the implementation of JobChallenge and iKariéra career opportunity events, organized by the IAESTE student organisation, Job Fair and Day of Companies. Each faculty organizes its company presentations where students are offered on-the-job training stays and the graduates job opportunities. Large-scale events attended by tens of companies are organized by the Faculty of Mechanical Engineering, Faculty of Chemistry, and Faculty of Electrical Engineering and Communication. At its website, BUT posts internships and study stays offered to its students and graduates. Through its Institute of Lifelong Education, it also offers companies and job consulting agencies free presentations and workshops for students. Cooperation with the future employers also takes place in defining the themes of Bachelor's, Master's, and doctoral degree projects. Doctoral students participate more and more often in research work for the cooperating companies.

5 **6** 7 8 9 10 11 12 13 14 1

DEMAND FOR STUDIES

a) Demand for BUT studies

Table 6.1: Demand for university studies

BUT		Bachelor's study			Masters study			follow-up Master's study			Doctoral Study		
		Appli-cants	Admi-tted	Enro-lled	Appli-cants	Admi-tted	Enro-lled	Appli-cants	Admi-tted	Enro-lled	Appli-cants	Admi-tted	Enro-lled
Faculty of Architecture													
Accredited degree pro-gramme groups	Master Code												
technical sciences and disciplines	21-39	532	210	101	0	0	0	190	133	95	21	7	7
Faculty of Electrical Engineering and Communication													
Accredited degree pro-gramme groups	Master Code												
technical sciences and disciplines	21-39	1.916	1.369	1.056	0	0	0	794	768	624	94	74	71
Faculty of Chemistry													
Accredited degree pro-gramme groups	Master Code												
natural sciences and disciplines	11-18	0	0	0	0	0	0	0	0	0	19	17	16
technical sciences and disciplines	21-39	1.071	733	474	0	0	0	182	146	119	31	27	24
Faculty of Information Technology													
Accredited degree pro-gramme groups	Master Code												
technical sciences and disciplines	21-39	1.502	959	663	0	0	0	434	292	284	50	47	46
Faculty of Business and Management													
Accredited degree pro-gramme groups	Master Code												
economy	62,65	2.526	1.249	756	0	0	0	2.555	1.622	614	29	24	23
Faculty of Civil Engineering													
Accredited degree pro-gramme groups	Master Code												
technical sciences and disciplines	21-39	2.968	2.426	1.450	0	0	0	1.583	951	703	98	85	22
Faculty of Mechanical Engineering													
Accredited degree pro-gramme groups	Master Code												
technical sciences and disciplines	21-39	2.292	2.256	1.238	0	0	0	1.082	951	590	100	91	82
Faculty of Fine Arts													
Accredited degree pro-gramme groups	Master Code												
artistic and cultural sci-ences and disciplines	81,82	362	48	46	0	0	0	65	36	36	12	6	6

Institute of Forensic Engineering													
Accredited degree programme groups	Master Code												
technical sciences and disciplines	21-39	0	0	0	0	0	0	552	436	263	14	7	6
Central European Institute of Technology VUT													
Accredited degree programme groups	Master Code												
technical sciences and disciplines	21-39	0	0	0	0	0	0	0	0	0	37	26	21
Total		**13.169**	**9.250**	**5.784**	**0**	**0**	**0**	**7.437**	**5.335**	**3.328**	**505**	**411**	**324**

*Note: * = faculty or part of a university offering an accredited programme*
FT = full time
C = combined/distance

b) BUT entrance exams

BUT has a system of written entrance exams for the basic subjects such as mathematics, physics, chemistry, informatics and general study skills and a foreign language of all the degree programmes. There is also an aptitude test for the artistic and architectural fields. The admission procedure directives of most faculties include entrance exam waivers under precisely specified conditions. Entrance exams are organized by faculties on their own, without external suppliers.

c) Follow-up Master's and doctoral students who graduated from a previous degree programme at another university

Table 6.2: Follow-up Master's and doctoral students who graduated from a previous degree programme at another university. Numbers of fist-year follow-up Master's and doctoral students who graduated from a previous degree programme at another university

BUT	follow-up Master's study	Doctoral Study
Faculty of Architecture	25	2
Faculty of Electrical Engineering and Communication	74	14
Faculty of Chemistry	34	11
Faculty of Information Technology	30	6
Faculty of Business and Management	248	5
Faculty of Civil Engineering	73	15
Faculty of Mechanical Engineering	74	20
Faculty of Fine Arts	9	3
Institute of Forensic Engineering	59	1
Central European Institute of Technology VUT	0	5
Total	**626**	**82**

*Note: * = faculty or part of a university offering an accredited programme*

d) BUT cooperation with secondary schools

BUT makes presentations at secondary schools of the study options at its faculties and at foreign partner universities. The presentations are made according to TOP 34 ranking of secondary schools providing BUT with the best applicants. The ranking is updated on a yearly basis. The BUT staff of the marketing and external relations departments come to secondary schools along with students from faculties. They also mention facilities not directly related to study such as student clubs, halls of residence, and canteens. In 2014 BUT participated in the Gaudeamus education fairs in Brno and Prague and the Académia fairs in Bratislava and Gaudeamus fairs in Nitra, Slovakia.

ACADEMICS

a) Recalculated numbers of academics and researchers (Table 7.1)

Table 7.1: Teachers and research staff (recalculated numbers **)

BUT	Teachers							Research staff ***	Total
	Total	Professors	Associate professors	Senior assistants	Assistants	Instructors	Research and development staff participating in teaching		
FA	45,470	7,500	15,917	14,685	7,368	0,000	0,000	0,440	45,910
FEEC	204,540	26,626	61,078	96,582	19,254	1,000	0,000	28,487	233,027
FC	68,327	10,428	16,661	39,238	1,000	1,000	0,000	19,490	87,817
FIT	54,867	6,571	13,745	32,937	1,614	0,000	0,000	17,689	72,556
FBM	82,330	8,984	16,632	47,588	9,126	0,000	0,000	0,235	82,565
FCE	346,489	29,737	63,516	178,648	60,917	0,000	13,671	33,801	380,290
FME	256,811	39,034	69,555	123,264	23,057	1,000	0,901	27,486	284,297
FFA	33,555	4,500	3,500	10,225	15,330	0,000	0,000	0,000	33,555
IFE	9,819	2,150	3,054	4,600	0,015	0,000	0,000	0,000	9,819
CSA	16,953	0,700	2,236	4,924	8,541	0,552	0,000	0,000	16,953
CEITEC	15,601	0,000	0,000	15,000	0,348	0,253	0,000	73,354	88,955
Total	**1.134,762**	**136,230**	**265,894**	**567,691**	**146,570**	**3,805**	**14,572**	**200,982**	**1.335,744**

*Note: * = Faculty or university constituent part offering an accredited degree programme/field of study.*
*Note: ** = (proportion of the total number of hours worked in a given period by all employees to the total yearly working hours per a full-time employee)*
*Note: *** = In this case, research staff includes all persons that are not teachers (under Section 70 of Act no. 111/1998 Coll. concerning universities)*

b) Age structure of academics and researchers with numbers of women

Table 7.2: Age structure of teachers and research staff (absolute numbers)

BUT	Teachers												Research staff ***		Total
	Professors		Associate professors		Senior assistants		Assistants		Instructors		Research and development staff participating in teaching				
Age	total	fem.	total	fem.	total	fem.	total	fem.	total	fem.	total	fem.	total	fem.	
up to 29	0	0	0	0	8	2	39	13	0	0	0	0	16	3	63
30-39	2	0	51	4	338	65	86	28	1	1	13	2	105	20	596
40-49	11	0	64	4	91	26	23	13	1	1	1	0	23	6	214
50-59	44	3	62	18	77	39	15	12	1	0	0	0	17	2	216
60-69	62	7	77	9	77	36	2	1	0	0	0	0	15	1	233

over 70	42	2	44	7	13	4	0	0	0	0	0	0	6	0	105
Total	**161**	**12**	**298**	**42**	**604**	**172**	**165**	**67**	**3**	**2**	**14**	**2**	**182**	**32**	**1.427**

*Note: *** = In this case, research staff includes all persons that are not teachers (under Section 70 of Act no. 111/1998 Coll. concerning universities)*

c) Teacher numbers by employment proportion and the highest qualification achieved (Table 7.3)

Tab 7.3: Teacher numbers by employment proportion and the highest qualification achieved (absolute numbers)

BUT	**Teachers**				**Total**
Faculty of Architecture					
Employment proportion	**Professors**	**Associate professors**	**DrSc., CSc., Dr., Ph.D., Th.D.**	**others**	
up to 0,3	0	0	0	0	0
up to 0,5	1	0	0	3	4
up to 0,7	0	2	0	1	3
up to 1,0	7	14	9	10	40
Faculty of Electrical Engineering and Communication					
Employment proportion	**Professors**	**Associate professors**	**DrSc., CSc., Dr., Ph.D., Th.D.**	**others**	
up to 0,3	2	4	7	3	16
up to 0,5	4	9	13	1	27
up to 0,7	7	12	15	8	42
up to 1,0	23	50	82	21	176
Faculty of Chemistry					
Employment proportion	**Professors**	**Associate professors**	**DrSc., CSc., Dr., Ph.D., Th.D.**	**others**	
up to 0,3	3	0	4	0	7
up to 0,5	2	1	9	0	12
up to 0,7	0	3	2	0	5
up to 1,0	8	12	34	5	59
Faculty of Information Technology					
Employment proportion	**Professors**	**Associate professors**	**DrSc., CSc., Dr., Ph.D., Th.D.**	**others**	
up to 0,3	0	1	4	1	6
up to 0,5	1	0	7	1	9
up to 0,7	5	9	5	1	20
up to 1,0	3	8	29	1	41
Faculty of Business and Management					
Employment proportion	**Professors**	**Associate professors**	**DrSc., CSc., Dr., Ph.D., Th.D.**	**others**	

up to 0,3	1	1	2	2	6
up to 0,5	0	1	6	4	11
up to 0,7	1	1	0	0	2
up to 1,0	7	12	35	5	59

Faculty of Civil Engineering

Employment proportion	Professors	Associate professors	DrSc., CSc., Dr., Ph.D., Th.D.	others	
up to 0,3	6	8	9	26	49
up to 0,5	2	5	21	22	50
up to 0,7	5	9	17	5	36
up to 1,0	24	50	126	75	275

Faculty of Mechanical Engineering

Employment proportion	Professors	Associate professors	DrSc., CSc., Dr., Ph.D., Th.D.	others	
up to 0,3	5	12	29		46
up to 0,5	10	12	21		43
up to 0,7	8	11	13		32
up to 1,0	31	57	145		233

Faculty of Fine Arts

Employment proportion	Professors	Associate professors	DrSc., CSc., Dr., Ph.D., Th.D.	others	
up to 0,3	0	0	0	1	1
up to 0,5	1	1	0	10	12
up to 0,7	0	0	0	0	0
up to 1,0	3	3	4	15	25

Institute of Forensic Engineering

Employment proportion	Professors	Associate professors	DrSc., CSc., Dr., Ph.D., Th.D.	others	
up to 0,3	0	0	0	0	0
up to 0,5	1	0	0	0	1
up to 0,7	0	0	1	0	1
up to 1,0	2	3	3	1	9

Centrum sportovních aktivit

Employment proportion	Professors	Associate professors	DrSc., CSc., Dr., Ph.D., Th.D.	others	
up to 0,3	0	3	0	3	6
up to 0,5	0	0	0	1	1
up to 0,7	1	0	1	0	2
up to 1,0	0	2	1	10	13

*Note: * = Faculty or university constituent part offering an accredited degree programme/field of study*
Note: the degree shown is the highest received

d) Numbers of academics from other countries (Table 7.4)

Table 7.4: Academics from other countries ** (absolute numbers)

BUT	
FA	0
FEEC	13
FC	7
FIT	4
FBM	6
FCE	12
FME	7
FFA	3
IFE	0
CSA	0
Total	**52**

*Note: * = Faculty or university constituent part offering an accredited degree programme/field of study*
*Note: ** = Persons employed by the university*

e) Numbers of associate professors and professors appointed in 2014 (Table 7.5)

Table 7.5: Newly appointed associate professors and professors (numbers)

BUT	**Number**	**Age average of newly appointed**
Faculty of Architecture		
Professors appointed in 2014	1	59
Associate professors appointed in 2014	1	43
Faculty of Electrical Engineering and Communication		
Professors appointed in 2014	2	47
Associate professors appointed in 2014	4	43
Faculty of Chemistry		
Professors appointed in 2014	–	–
Associate professors appointed in 2014	1	35
Faculty of Information Technology		
Professors appointed in 2014	1	43
Associate professors appointed in 2014	–	–
Faculty of Business and Management		
Professors appointed in 2014	–	–
Associate professors appointed in 2014	1	42

Faculty of Civil Engineering		
Professors appointed in 2014	1	53
Associate professors appointed in 2014	3	38
Faculty of Mechanical Engineering		
Professors appointed in 2014	1	53
Associate professors appointed in 2014	9	38
Faculty of Fine Arts		
Professors appointed in 2014	–	–
Associate professors appointed in 2014	3	42
Total professors	**6**	
Total associate professors	**22**	

*Note: * = Faculty or university constituent part offering an accredited degree programme/field of study*

f) Further education courses for BUT academics (number of courses and number of participants) (Table 7.6)

Table 7.6: Further education courses for academic staff *

BUT	Number of courses	Number of participation
Courses developing teaching skills	1	14
Courses developing general skills	152	1.429
Specialised courses	0	0
Total	**153**	**1.443**

*Note: * = These include all further education courses offered by the university or outsourced courses in which the university contributes to the fees paid by the university employees.*

g) Career structure for the academic staff and incentives for rewarding employees by the results they achieve

BUT does not have a career structure for its academic staff. Once a year, individual evaluation of the employees' work results is carried out determining the amount of bonuses for the upcoming period. For fulfilling special tasks, extra bonuses are awarded.

SOCIAL AFFAIRS OF BUT STUDENTS AND EMPLOYEES

a) Scholarships paid to students listed by number of students who gained or received them regularly in the current year (Table 8.1)

Table 8.1: Scholarships paid to students by the scholarship type (student numbers)

Scholarship type	Number of students	Number of scholarships
Merit scholarship under section 91, par. 2, letter a)	1.491	7.493
Scholarship for excellent results in research, development, innovation, arts or creation under section 91, par. 2, letter b)	2.498	4.670
Scholarship for research, development, and innovation activity under a special legal regulation, section 91, par. 2, letter c)	1.131	2.772
Social scholarship under section 91, par. 2, letter d)	0	0
Social scholarship under section 91, par. 3	318	655
Scholarship for students in cases requiring special regard under section 91, par. 2, letter e)	0	0
including accommodation scholarship	15.139	36.857
Support for studies abroad under section 91, par. 4, letter a)	1.856	2.790
Support for studies in Czech republic under section 91, par. 4, letter b)	120	208
Doctoral scholarships under section 91, par. 4, letter c)	1.377	13.421
Other scholarships	255	547
Total	**24.185**	**69.413**

b) Scholarship programmes offered by BUT

Apart from the basic subsidized scholarship programmes, BUT offers , in compliance with the internal regulations, scholarship programmes to support mobility (the mobility scholarship fund), admission of the best applicants to the first year of Bachelor's programmes (a single financial aid of 6000 CZK for 500 best candidates admitted based on the results in the common part of the school-leaving exam), support for students who or whose family cannot cover study expenses due to an exceptional family situation. Other scholarships are awarded by faculties (especially merit or social ones) or by the rector in accordance with the scholarship system.

c) Quality of the counselling services provided at BUT

Being part of the BUT Institute of Lifelong Learning, the student counselling section was established in 2006. At present, the section's principal activities include professional (group and individual), psychological, and social-legal counselling for students, study support for students with specific needs and cooperation with companies and other organizations. Counselling services may partially overlap. Demand for counselling is greater than the offer. According to the feedback received, students are satisfied with the services.

Professional counselling offers:

• Soft-skill-developing group activities (time management, assertiveness, presentation skills, personal efficiency, teamwork etc.) and preparation for job interviews (how to write a CV, preparation for the Assessment Centre), company presentations, JobChallenge fair. These services prepare graduates for entering the labour market and help to increase their chances of employment.

- A total of 55 courses were organized.
- About 500 BUT students participated in the JobChallege fair. There were also lectures by company representatives and various experts.

• Individual activities: setting up a personal professional profile, career counselling (interview rehearsal, CV consulting, etc.), and coaching.

A total of 81 consultations were provided.

Psychological counselling:

Provides an opportunity to work on one's personal development by group or individual activities, to deal with difficult situations, study and adaptation problems.

- A total of 268 consultations provided.

Study counselling:

As part of study counselling, informative and get-together groups are organized for first-year students where students are informed about the course of study, information systems, canteens, the city of Brno, and meet their fellow students.

- A total of 10 adaptation groups were organized for those admitted to Bachelor's study.

Counselling for students with various types of handicap:

• Socially handicapped students are offered social and legal counselling by the counselling section of the BUT Lifelong Learning Institute on access to information of the eligibility conditions of the social benefits and scholarships granted pursuant to the University Act and by Czech-Republic-based foundations. The counselling is provided by an expert in social benefits.

Socially handicapped students are further offered legal counselling to cope with stressful situations (usually concerning the duty to support and maintain), employment issues or questions are answered on criminal acts. Counselling is provided by a legal expert in individual or group sessions.

A total of 64 individual or group counselling sessions were offered lasting 60 minutes on average.

Study candidates and students with specific learning needs (learning or health disability, mental disorders, chronic somatic disorders) are provided with support as defined by the standards of the Ministry of Education, Youth, and Sports of the Czech republic. Services are provided either by enabling special admissions, organising study by offering supporting services and organisational measures. In 2014, there was a considerable increase in the number of individual teaching lessons. This mostly applies to mathematics and physics.

In 2014, 95 students with specific needs were provided with 632 hours of these services including individual mathematics and English lessons, interpreting to the Czech sign language, simultaneous transcription, subject recording, articulation interpreting, space orientation, and individual consulting with advisors on study adaptation.

Students with health handicap (attention and mood irregularities, anxieties, sleep disorders, etc.) are offered nervous system training by the EEG Biofeedback method. This is a modern method for mental power training using a special electro-encephalograph provided by two certified therapists

A total of 287 training sessions were provided each lasting 60 minutes.

Others:

Other activities of the counselling section include carrying out surveys among applicants, students and graduates or teachers, and promotion.

In 2014, a study was implemented on removing the architectural barriers at the Faculty of Mechanical Engineering. The outcome of this study was a technical design for the removal of barriers in some parts of the faculty building with an estimate of the implementation costs.

We inform students on the results of job opportunity surveys among companies and other relevant sources of information to help them find jobs.

New information leaflets were made on social and legal counselling.

A video clip was made in the Czech sign language on study at Brno University of Technology.

Twenty presentations were made during the courses on the consulting services offered.

The services provided by the centre are used by:

BUT students
New graduates
BUT study applicants

For more information, see:

www.lli.vutbr.cz/poradenstvi,
www.presbloky.cz
www.facebook.com/poradenskecentrumvut

Counselling offered in 2014

Counselling	Employees/recalculated full-time employments	Number of consultancy hours per week	* Number of counselling contacts		
			interview	by phone	by e-mail
Study	2/0,05	2	164	5	5
Psychological	2/0,2	16	268	10	20
Career	2/0,4	16	1.437	10	20
For students with various types of handicap	1/0,9 + 2/0,05	16	983	0	0
Other	3/0,1	1	20	0	0

d) Work with students with specific needs

Care of students with specific needs is mostly taken individually by faculties, which even gain allowances from MEYS for more serious cases. Part of the Lifelong Learning Institute is a counselling centre coordinating the faculties in this sphere and helping by providing expert advice.

e) Support for exceptionally talented students and cooperation with secondary schools

In 2014, too, as part of the „Best 500" competition, BUT granted single scholarships to the best applicants admitted to the first year of the Bachelor's degree programmes. These 500 students were chosen based on the results in the common part of the school-leaving exam taken in 2013 where the students preferred and awarded were those who chose mathematics and English in the common part. The scholarships are supposed to encourage excellent secondary school students to study the technical fields at BUT. The outcome of this campaign is satisfactory as a greater number of more talented students applied for study in the first year.

BUT started a closer cooperation with the secondary schools, providing it with the best graduates.

It is mainly the faculties that work with the talented students in the higher years of study. The students are awarded merit scholarships, participate in various projects, the position of a research or teaching student assistant is being restored.

f) Accommodation and catering services at BUT (Table 8.2)

Table 8.2: Accommodation, catering

BUT	Number
Total number of beds at BUT halls of residence	6.439
Beds in hired facilities	0
Accommodation applications submitted until 31st December 2014	5.338
Accommodation applications granted until 31st December 2014	5.338
Bed-days in 2014	1.516.083
Main meals sold to students in 2014	936.398
Main meals sold to BUT staff in 2014	105.136
Main meals sold to other diners in 2014	57.925

g) Care of BUT staff

BUT provides all employees with medical care by a university physician. There are training and holiday centres outside Brno to be used by BUT employees. Employees can use the sports facilities of the Centre of sports activities.

Employees can take their meals at the BUT canteens, Masaryk University canteens and other catering facilities using meal vouchers. They are provided with a boarding allowance.

The school also contributes to the employees' pension by additional insurance and private life insurance. In exceptional social cases, it grants an allowance in the form of irretrievable financial aid.

BUT actively supports language skills improvement and enables the employees to increase and improve their qualifications.

6 17 18 19 20 21 22 23 24

INFRASTRUCTURE

a) BUT Central Library (Table 9.1)

The BUT Central Library serves as a coordinating site of BUT libraries providing consulting and counselling services and issuing methodological guidelines.

The BUT Central Library runs and manages the Aleph500 librarian system, which is an essential data resource for the Primo retrieval interface. The activities of 2014 included data enhancement to improve the retrieval efficiency. Proper attention was paid to improving the quality and consistency of the catalogue, duplicate entries were removed and index records checked and repaired if necessary. Focus was also given to linking and creation of authority headings.

The Primo discovery system was put into routine operation in early 2014, which provides a unique retrieval interface for specialized resources available at BUT. During the first year of operation, the users carried out over 230 thousand retrievals, which means almost 640 a day. A test-group of first-years students performed a user-testing of the Primo system, which resulted in the interface being modified to improve user-access. Other services were installed during the year providing the users with better options in work with information resources. The bX service, for example, can offer papers of potential interest to the user based on their behaviour. Next the Citace PRO citation manager services were integrated into the Primo interface and another interface put into operation for receiving requests for document e-delivery. Via Primo, several thousands of branch and multidiscipline information resources can be searched and its purchase has a positive impact on the use of electronic information resources. The number of downloaded records in all the information resources available exceeded 500,000 in 2014.

A series of training courses took place at the BUT faculties on Primo operation with almost 500 users trained. The topic of work with the system was also included in the e-learning courses for the first-year and doctoral students. Information education is one of the Central Library's key functions. In 2014, almost 2,500 first-year students completed information literacy courses organized in cooperation with faculty libraries. Two courses for doctoral students on electronic information resources and research paper publication were added to the basic IVIG course. E-learning courses are offered through the university Moodle system. In late 2014, tutors form the faculty libraries were trained on teachers' work with this system. In addition to e-learning courses, the Central Library organized several lectures and seminars attended by almost 800 participants.

For several years, Brno University of Technology has been building a digital library as a conceptual solution to providing a general access to the digital content created at the university. The largest collection is an archive of electronic versions of theses and final projects with proper attention also paid to academic journals published by the university. In late 2013, BUT signed the Berlin declaration, thus adopting institutional policy and embracing the principles of open publishing. In 2014, these initiatives resulted in establishing links with the Apollo IS making it possible for an author to simply publish his/her research results in an open-access mode through the digital library after checking on the licence terms. The digital library was also involved in the OpenDOAR and OpenAIRE projects, which makes the published papers more visible. In mid 2014 an open-access publishing fund was established, with BUT now ranking among the world's leading institutions.

Table 9.1: BUT University libraries

BUT	Number
Yearly collection increase	12.909
Total collection	222.317
Number of periodical titles: printed/electronic form (estimate)*	740/23

*Note: * = Only the periodical titles subscribed to by the University (or received as a gift or by an exchange) in paper and electronic formats are shown. Not included are other periodic titles that can be accessed by the library users within full-text resource consortia.*

b) VUTIUM Press

The VUTIUM Press published three new titles (For a Lovelier World, Brno Built and Non-Built, Network Applications and their Architecture) and, above all, Physics by Halliday, Resnick, Walker, a new edition of the famous textbook.

A total of 228 ISBN's were assigned in 2014.

Eleven issues were published of the journal BUT News with a yearly edition of 9,900. The number of pages per issue is 32 plus 4 pages cover. The edition of one issue is 900 copies.

In 2014, the VUTIUM Press editorial board met in December to present the titles to be included in the 2015 publishing plan and their order.

In cooperation with the BUT Central Library, a development programme was implemented in 2014 focused on electronic publishing.

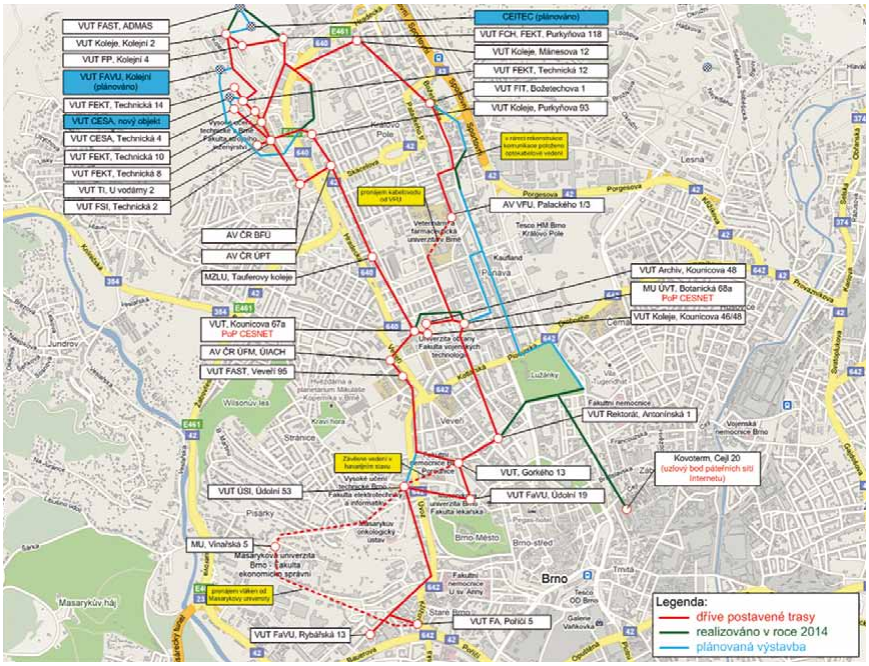
The VUTIUM Press participated in 4 book exhibitions and fairs – World of Books, (Prague, May), Autumn Book Fair (Havlíčkův Brod, October), International Frankfurt Book Fair (October), Cracow Book Fair (October).

c) Centre of Computing and Information Services

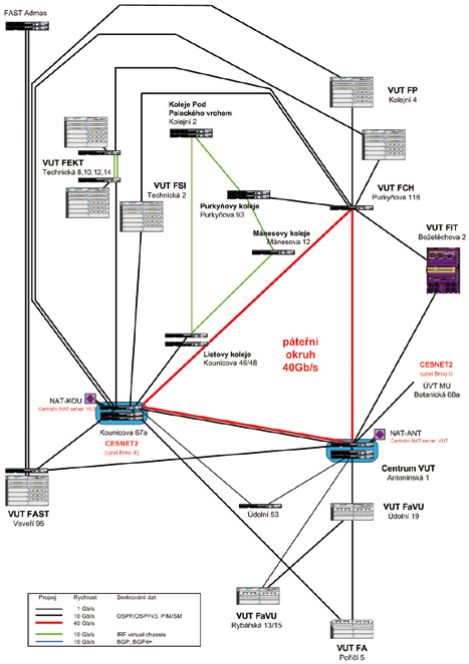
The Centre of Computing and Information Services worked on the improvement of the BUT Information System. In the Apollo interface, a new module was launched for registering in-house standards and directives and a system for work with students with special needs. New models were added to web portal for teachers, as well as the navut.cz web presentation and the vutfu.cz campaign web. The e-application module and the best-BUT-teacher enquiry were revamped. The BUT graduates archives are being digitalized including books, diplomas, and profiles of FEEC graduates.

Development work on the backbone network involved the replacement of the no longer satisfactory suspension cables by underground cables with a sufficient number of fibres. In particular, finished were the first part of the Antonínská–Lužánecká–Božetěchova route with connections to long-distance routes, the second phase of the Purkyňova–Hradecká route, the AdMaS connection, the CEITEC Purkyňova–Kolejní, Kounicova–Botanická route and the reserve FEEC connection at Technická 10–12. The backbone network is run on 40 Gbps elements. Apart from the old Internet connectivity via CESNET, BUT is now connected via another four commercial Internet providers. Increased attention was paid in 2014 to cooperation on network safety – particularly with respect to the new Act no. 181/2014 Coll. concerning cyber safety. The BUT safety team started to cooperate with the National Security Authority and the Czech National CSIRT Team.

BUT cable optic network in late 2014



Topology of the BUT L3 Backbone network in late 2013



LIFELONG LEARNING

a) Lifelong learning courses at BUT (Table 10.1)

Table 10.1 Lifelong learning courses (course numbers)

BUT	Master Code	profession-oriented courses			special-interest courses			U3A	Total
Accredited programme groups		**up to 15**	**up to 100**	**more**	**up to 15**	**up to 100**	**more**		
natural sciences and disciplines	11-18							1	1
technical sciences and disciplines	21-39		15					52	67
agriculture, forestry, veterinary	41,43								
medicine, pharmacy	51-53							4	4
social sciences and services	61,67,71-73	9	3	42				5	59
economics	62,65							2	2
law, public administration	68								
pedagogy, teaching, and social welfare	74,75			1					1
psychology	77								
culture and art	81,82							6	6
Total		**9**	**18**	**43**				**70**	**140**

b) Student numbers of lifelong-learning courses (Table 10.2)

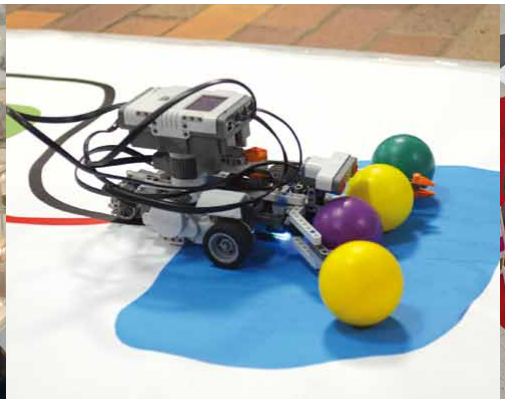
Table 10.2 Lifelong-learning courses offered by BUT (student numbers)

BUT	Master Code	profession-oriented courses			special-interest courses			U3A	Total
Accredited programme groups		**up to 15**	**up to 100**	**more**	**up to 15**	**up to 100**	**more**		
natural sciences and disciplines	11-18							22	22
technical sciences and disciplines	21-39		104					851	955
agriculture, forestry, veterinary	41,43								
medicine, pharmacy	51-53							162	162
social sciences and services	61,67,71-73	123	36	547				416	1.122
economics	62,65							26	26
law, public administration	68								
pedagogy, teaching, and social welfare	74,75			19					19
psychology	77								
culture and art	81,82							884	884
Total		**123**	**140**	**566**				**2.361**	**3.190**

c) University of the 3rd Age

Brno University of Technology, like other public higher-education institutions in the Czech Republic, offers senior citizens courses at the University of the Third Age (U3A). In line with the specialisations of its eight faculties, these are mostly engineering courses with a large part of them focusing on computer science and architecture, but also on economics, and social sciences particularly on communication. A total of 70 courses were offered in 2014 for which 2361 of senior citizens signed up. Traditionally, computing skills such as use of tablets, history of architecture, means and methods of social communication, and historical figures. The U3A staff keep improving the quality of the lectures and textbooks distributed to the students. Care of the quality of teaching is the main commitment of the Association of the universities of the third age in the Czech Republic (AU3v), which is based in the BUT Centre at Antonínská 1.

7 18 19 20 21 22 23 24 25



RESEARCH, DEVELOPMENT, ARTISTIC, AND OTHER CREATIVE ACTIVITIES

a) Fulfilment of the MAYS and BUT strategic plans (as amended for 2014). Characteristics of creative activities at BUT.

The basic precondition for the fulfilment of the BUT and MEYS strategic plan objectives in science and research is the support by the university for both basic and applied research. The aim is to improve the quality of research work, support the basic, applied and contracted research, pay attention to innovations, increase the engagement in domestic and international research cooperation, thus diversifying the funding resources. The activities of the managements of the university, its constituent parts, teachers and researchers s well as doctoral students were in line with the university's long-term commitment to be a major educational and research institution on a regional, national and international scale increasing its prestige. The aim was to strengthen the total institutional resources for a long-term conceptual improvement of research and development at the university, increase the targeted funding of research, pay attention in the contracted research and technology transfer and improve the popularization of science.

These objectives are closely related to the requirement of sustainability of the five regional centres built as part of the second axis of the RDI Operative Programme and two centres of excellence built as part of the first axis of the of the RDI Operative Programme as well as to the project indicators that BUT pledged to fulfil. Brno University of Technology as a whole makes every effort in optimally using its capacities to further advance research and development. The aim is to optimally use the newly built infrastructure for the finished RDI OP projects, cooperate in submitting and working on joint grants with scientific institutions such as institutes of the Academy of Sciences of the Czech republic, other faculties and universities at home and abroad. In 20014, all the five finished regional centres moved from a start-up period to routine research and development and received funding from the NPU I and NPU II programmes. The research centres built present a major research potential, which must be made good use of by further research and development. The key challenges of enhancing research and development activities in all the strategic directions are the same for all BUT faculties, institutes, and constituent parts. The new laboratories and cooperating research departments of the university have clear tasks for the application sphere and have sufficient human resources. Only in this way, a sufficiently quick and high-quality response can be ensured to the demand by the application research and development of the industries. The extension of the basic research is related to the two centres of excellence to be finished in this year. The university provides systematic support for the building of new research teams with researchers from different faculties, using the CEITEC SYLICA a SoMoPro project to recruit distinguished experts from abroad. As a result, the number of applied results according to the current RIV methodology achieved in basic research on the one hand and the results in applied research and innovations on the other hand is approximately the same.

The efficiency of research is ensured by purchasing and sharing new equipment, rooms and common laboratories. The BUT management sees these aspects of internal communication and cooperation coordination as principal paying maximum attention to these issues. Other priorities of research and development include openness and efficiency, horizontal permeability within BUT and further development of international cooperation in research and development. The intense involvement of BUT in the cooperation with the application sphere in line with the BUT Strategic Plan and its updates was rewarded: a Gold Medal for the best innovation exhibit 2014 created by contracted cooperation of companies with a research organization was won by a mobile laboratory for remote chemical analysis built by CEITEC VUT scientists, the attention of experts was focused on the experimental VUT 051 RAY aircraft with electric drive and the ADVEE presentation robot.

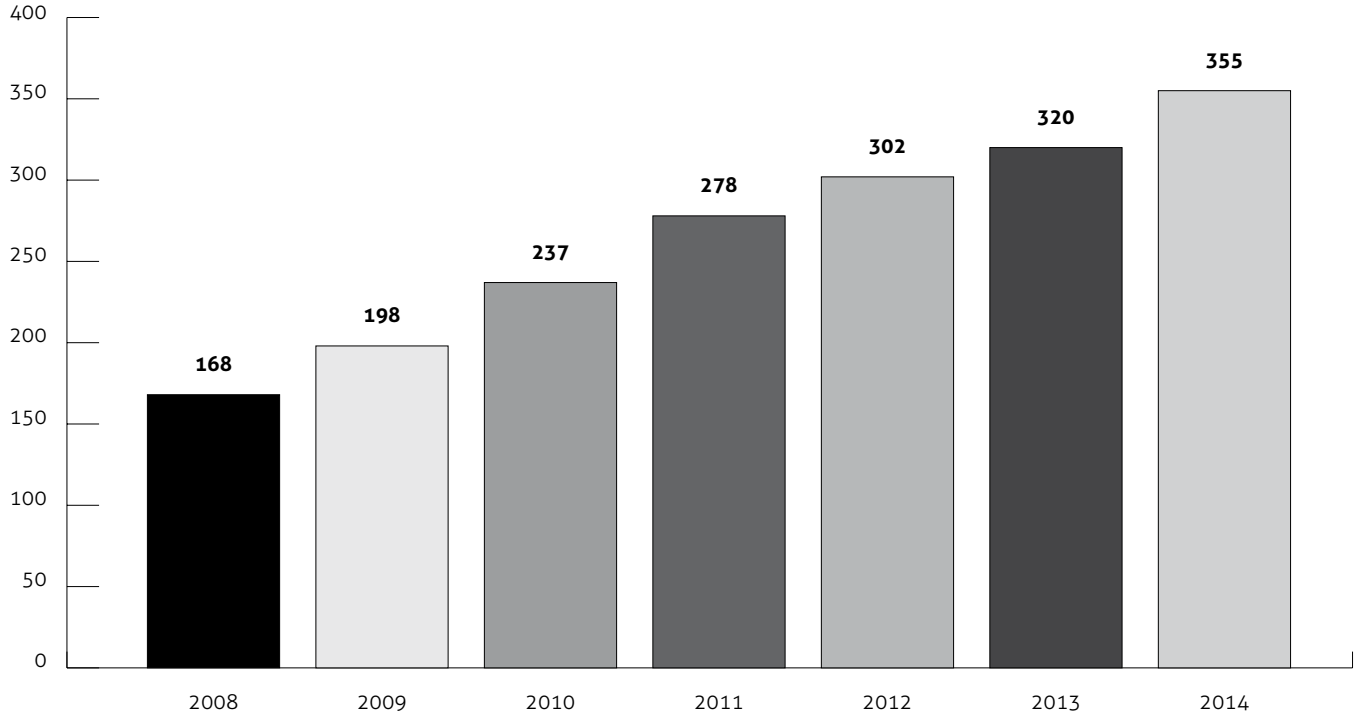
Several other achievements of basic research include interdisciplinary projects. These are projects of the 7th EU Framework such as Artemis, Eniac, ESA, COST projects and cooperation with CERN. Successful was also the transfer of knowledge to the application sphere, which includes applications of lasers, special materials for electronics, optoelectronics, and optics, applications of holographs and nanomaterials. Foundations were laid in China for the industrial use of the patented Hydal technology for recycling used deep-fry oil.

In 2014 BUT was concerned with the setting up of an R&D Strategy for the preparation of the RDE OP and ECI OP projects. This is a new opportunity to win considerable funding for further cooperation and R&D. The university's research departments place long-term focus on research and development within European and world's research priorities to meet the

requirements of a research university comparable on an international scale. We were also successful in submitting projects for the H2020 calls. The intensive work resulting in 60 projects submitted brought six projects receiving funding in 2014.

In 2014 BUT rewarded authors of papers published in impacted journals from a special motivation system financially backed by a development programme. A total of 355 papers were published in impacted journals in 2014 including 97 in journals of the first quartile and 82 in the second quartile according to the WoS rating.

Number of papers indexed in the WoS database (2008–2014)



b) Links between creative activities and teaching

The basic educational conception of the of the BUT faculties and constituent parts links creativity with education in several ways: by having talented students of all degree programmes engaged in research and included in research teams by a system of incentives, individual access to students, by internationalization and mobility motivated by concrete international laboratories. The intermingling of education and research starts in the third-year of Bachelor's study when students engage in work on particular research projects. In direct relationship to these projects, students receive the subjects of their year, research, Bachelor's, and Master's projects as well as partial topics of research tasks.

Active participation in research and development within research and application projects is then a condition necessary for students to receive a Ph.D. degree. A significant system of incentives is an internal grant competition organized every year through junior and standard grant projects. These projects are guided by the "Principles of a Student Grant Competition in Support of Specific University Research ". BUT organizes student grants at faculties as well on an inter-faculty basis to promote multidisciplinarity. A great help in raising the level of doctoral study is also the RC OP "Excellent Young Scientists" projects

to help find positions for post-doctoral students, who as part of their research activities make their young colleagues familiar with their methods of work on projects worked on jointly with industrial partners.

c) Participation of Bachelor's, and Master's students in creative activities at BUT

Bachelor's and Master's students participate in creative activities by taking part in the Student Grant Competition and by working on research projects. The definitions of year-end, Bachelor's, and Master's projects reflect in themselves a partial solution, talented students can work as members of research teams at institutes. It is a matter of course that they do the experimental part of research using new state-of-the-art infrastructures, built with the support of the RDI OP, thus improving their skills with modern equipment.

Parts of the specific research projects are student conferences held every year at faculties, with external experts sitting on juries. These are experts from such companies as Honeywell, ABB, Siemens, FEI, and others. During their presentations, students are given opportunities of informally defending the results achieved by working on research projects of all kinds, thus gaining experience and good practice for their future work in teams. An example may be the EEICT 2014 student conference co-organized by the faculties of electrical and information technology engineering where 150 projects were presented in eight Bachelor's, ten Master's, and six doctoral sections. The conference was sponsored by major industrial partners such as Honeywell, Tescan, ABB, RedHat, and IBM. Three best authors in each section were financially rewarded.

d) Total targeted funding of research and innovations received in 2013 and university spending on grants or funding provided for solution co-providers and suppliers

The following table shows the total non-investment targeted funding of research and innovations received by BUT in 2014 indicating how much was spent on grants and projects worked on directly at BUT and how much was given by BUT to solution co-providers.

Received targeted non-investment funding of research, development, and innovations

Total subsidies	1.008.410 tis. Kč
BUT subsidies	916.270 tis. Kč
Subsidies transferred to solution co-providers	92.140 tis. Kč

e) Scientific conferences (co-) organized by BUT (Table 11.1)

Every year, BUT co-organizes conferences, some of them appearing in the yearly calendar of events. See the below table.

Table 11.1: Scientific conferences (co-) organized by BUT (numbers)

BUT	Total	Including with participant number greater than 60	Including with international participation
Faculty of Architecture	4	1	1
Faculty of Electrical Engineering and Communication	11	11	7
Faculty of Chemistry	2	2	2
Faculty of Information Technology	5	5	4

Faculty of Business and Management	1	1	0
Faculty of Civil Engineering	13	5	10
Faculty of Mechanical Engineering	5	5	5
Faculty of Fine Arts	0	0	0
Institute of Forensic Engineering	2	1	1
Central European Institute of Technology	1	1	1
Total	**44**	**32**	**31**

f) Support for doctoral students and staff in postdoctoral positions

BUT succeeded in winning several RC OP projects for supporting doctoral students and securing positions of post-doctoral students, who at various workshops and internal seminars contribute to linking the creative activities with teaching.

These are, for example, "Excellent Young Scientists " and "Support for Excellent Teams of Interdisciplinary Research at BUT" RC OP projects.

g) Participation of application sphere in creating and implementing degree programmes

Within the applied-research projects supported by the Czech Technological Agency, BUT works on joint projects such as with Škoda Auto Mladá Boleslav as part of the research carried out by the whole VW concern, next Honeywell, Tescan, FEI, AVX Kyocera Group, Microsoft, Bosch Diesel Jihlava, Evektor, AŽD Praha, Sika, and others. Important are also projects on the basis of contracted research, which receives special focus from the BUT management. Contracted research is one of the major indicators of research centres. Important is the cooperation with the Regional Chamber of Commerce and the South Moravian Innovation Centre, which help link the business and academic environments through presentations, projects and organize joint meetings. New cooperation projects are embarked upon every year thanks to the BUT participation in an innovation vouchers project covering not only the South Moravian Region but also Zlín, Olomouc, Liberec, Karlovy Vary, etc. The Technology Transfer Centre created a new www.spolupracesvut.cz. website to give a better overview of the cooperation projects offered by BUT research teams and to present the possible use of the protection of the research by licences. The innovative outcomes of the project are offered for use to industrial partners.

The application sphere participates in the development and implementation of degree programmes with their distinguished experts sitting on scientific boards and educational boards of degree programmes. External experts also give lectures in all types of study, are supervisors of Bachelor's and Master's degree projects and special instructors in doctoral programmes.

h) Cooperation with the application sphere on providing and disseminating information

BUT cooperates on joint projects of applied and contracted research with a number of Czech companies. Cooperation with the application sphere also takes the form of companies demanding the delivery of a complete solution to a particular engineering problem. The innovation voucher programmes in regions help the university find new cooperation partners. Thanks to projects implemented as part of RDO OP, Calls no. 6.3 and 7.3 in support of pre-seed activities, 49 functional samples and 19 prototypes have recently been finished to verify protected technologies and are currently being offered for use by the industry.

These are examples of the options available:

• use of a multifunction filtering unit:
http://www.vutt.cz/cz/aktualni-nabidka/fakulta-strojniho-inzenyrstvi/item/174-zarizeni-pro-testovani-katalyzatoru-na-snizovani-polutantu-z-odpadniho-plynu,

• device for scanning and recognizing eye retina and iris:
http://www.vutt.cz/cz/aktualni-nabidka/fakulta-elektrotechniky-a-komunikacnich-technologii/item/173-zarizeni-pro-snimani-a-rozpoznani-sitnice-a-duhovky-oka,

• set of thermal accumulation modules for stabilizing the thermal environment in buildings: http://www.vutt.cz/cz/aktualni-nabidka/fakulta-stavebni2/item/199-chytra-stena,

• combined oil and gas burner: http://www.vutt.cz/cz/aktualni-nabidka/fakulta-strojniho-inzenyrstvi/item/190-kombinovany-olejo-plynovy-horak

and 80 more technologies offered.

Portfolio of BUT intellectual property managed by the TTC between 2010 and 2014

Year	2010	2011	2012	2013	2014	Total
employee inventions registered	49	36	94	83	73	**400**
EU invention EPC applications submitted	0	4	3	5	2	**17**
international PCT invention applications submitted	0	5	1	5	4	**19**
American invention applications submitted (USPTO)	0	1	0	2	0	**3**
Japanese invention applications submitted	0	1	0	0	0	**1**
Chinese invention applications submitted	0	1	0	0	0	**1**
Eurasian invention applications submitted	0	1	0	0	0	**1**
Czech invention applications	22	20	25	44	35	**172**
Czech utility design applications submitted	34	35	37	61	29	**227**
Czech trade mark applications submitted	2	0	0	0	2	**4**
Industrial design applications submitted	4	9	8	12	3	**37**
Community design applications submitted	0	0	0	3	0	**3**
Czech patents granted	1	4	22	23	26	**80**
Czech registered utility designs	21	34	33	45	49	**200**
Czech registered industrial designs	2	5	8	3	14	**32**
Community designs granted	0	0	0	3	0	**3**
Japanese patent granted	0	0	0	0	1	**1**
European EPC patents granted	0	0	2	2	0	**4**
American patents granted	0	0	0	1	0	**1**
Eurasian patents granted	0	0	0	1	0	**1**

i) Number of agreements with the application sphere on the use of the results of research, development, and innovations. Listing the numbers of valid contracts in 2014 and new contracts signed in this year.

The table also incorporates item l) Licensing revenue.

Year	2010	2011	2012	2013	2014	Total
Licence agreements signed	2	7	5	10	8	**32**
Revenues from commercialization	0	101.611 Kč	620.708 Kč	33.428 Kč	166.654 Kč	**922.401 Kč**

Note: The table shows the revenues from the licence agreements signed and co-ownership of industrial rights administered by the DTT. It does not include revenues from licences and other forms of commercialization of intellectual property implemented by faculties alone (such as contracted research)

j) Numbers of experts from the application sphere participating in teaching in accredited degree programmes (persons participating in teaching in at least one course in 2014)

Table 11.2: Experts from the application sphere participating in teaching in accredited degree programmes(numbers)**

BUT	Number of persons
Faculty of Architecture	99
Faculty of Electrical Engineering and Communication	25
Faculty of Chemistry	6
Faculty of Information Technology	27
Faculty of Business and Management	48
Faculty of Civil Engineering	36
Faculty of Mechanical Engineering	74
Faculty of Fine Arts	5
Institute of Forensic Engineering	17
Central European Institute of Technology	0
Total	**337**

k) Numbers of study branches with on-the-job training lasting at least one month included in their curricula

Table 11.3: Study branches with on-the-job training lasting at least one month included in their curricula (numbers)

BUT	Number of study branches
Faculty of Electrical Engineering and Communication	7
Faculty of Business and Management	1
Faculty of Civil Engineering	3
Total	**11**

*Note: * = Faculty or university constituent part offering an accredited degree programme/field of study*

l) BUT licensing revenues in 2014

See table under i)

m) BUT contracted research and development revenues

No revenue at BUT.

n) Numbers of spin-off/ start-up companies supported by BUT in 2013

No revenue at BUT.

o) Number of spin-off/start-up enterprises supported by BUT in 2014

Table 11.4: Spin-off/start-up enterprises supported by BUT in 2014 (numbers)

BUT	Number of spin-off/start-up enterprises
Total	1

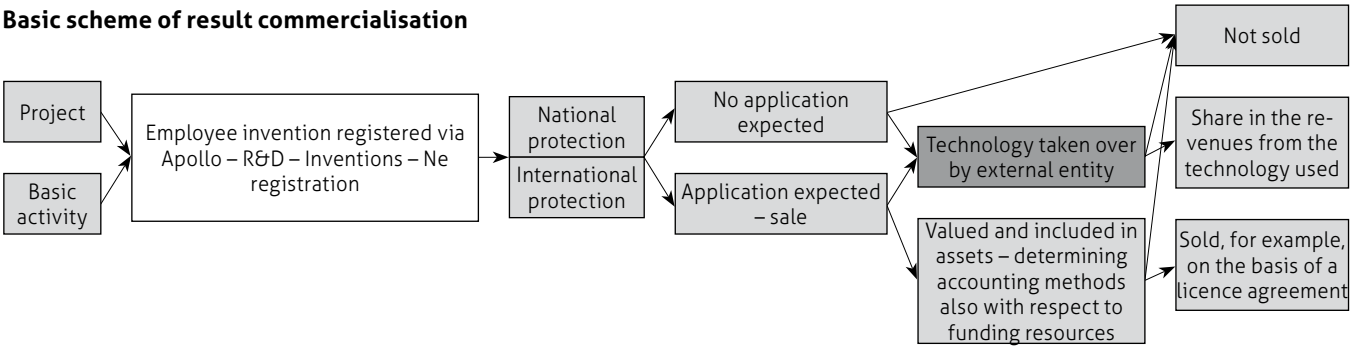
p) BUT strategy for commercialization

For a long time, BUT has been adopting a consistent approach to the protection of intellectual property rights guaranteeing the ownership rights to all the research results and preferring licensing to property right transfer. Co-ownership of the results with a third party, particularly concerning the results of joint projects, is approached on an individual basis depending on a particular result. The agreement provisions mainly protect ownership rights, legal costs, and revenues sharing. The method of commercialising the result can be seen in the below picture

The results created are protected by BUT depending on their nature and based on an internal assessment of the commercial potential. In particular cases, the intellectual property protection strategy is determined by the TTC. Very quickly, the university must decide whether the protection is to be extended beyond the Czech Republic, which is mostly done via the European Patent Office or using the instruments of the Patent Cooperation Treaty (PCT). The offer of the results under protection is published through the European Enterprise Network (EEN) or through the Global Marketplace of Scientific and Technological Innovation (INNOGET) or via the www.spolupracesvut.cz portal.

1 Contracted research is based on cooperation (interaction) that specifically satisfies the needs of application sphere entities with the university providing the application sphere entities with research tailored to their needs and being financed by this entity. These are typically larger projects, original research and written report. Contracted research is usually commissioned by a particular external organisation (for its needs). It is not important whether the funding provided by the application sphere entity for the research come from public or private resources. As contracted research cannot be regarded the case of a university being the beneficiary of a funding targeted to applied research.
2 Paid training courses enhancing the qualification of the employees of an application sphere entity such as in-house educational courses. Here , an application sphere entity is a legal entity, whose main activity is not research and development. This can be a business entity, public administration body, non-profit organization, etc. – always provided that the main activity is not research. Those revenues will be included that come from educational courses ordered, that is, as agreed with the organization, for its employees. These are not costs incurred for the course participants employed by the company as defined above. On the contrary, these are courses created after an agreement with a selected company because this company wished to have its employees trained.

Basic scheme of result commercialisation



q) Characterisation of BUT activities in and outside the region

BUT cooperates on joint applied and contracted research projects with a number of companies such as Škoda Auto Mladá Boleslav, Honeywell, Tescan, FEI, IBM, Saka, Microsoft, Bosch Diesel Jihlava, Evektor, AŽD Praha, and others. Significant cooperation takes place with the regional chamber of commerce contributing to the linking of the commercial sphere and academia by through presentations, projects, and contact meetings. Every year, new cooperation projects are launched thanks to the BUT participation in the innovation vouchers project not only in the South Moravian Region but also in Zlín, Olomouc, Liberec, Karlovy Vary, etc. Another form of cooperation with the application sphere is implemented based on the demand by companies for particular technical solutions. Together with other Brno universities, the South Moravian Innovation Centre and the regional authorities, BUT participates in formulating and updating the South Moravian Innovation Strategy cooperating with selected secondary schools which provide BUT with graduates for study at the university.


MUSEUM


umístění

INTERNATIONALIZA-TION

a) BUT strategy for the development of international relations and environment

The BUT internationalization strategy is in line with the MEYS' Strategic Plan based directly on the BUT Strategic Plan for 2011-2015. The priorities are given by the amendments to the plan for each year and particularly by the International Relations Strategy. A major objective is to increase the number of Bachelor's and Master's students coming from Slavic countries and to encourage them to study for the doctoral degree. Another objective is to establish and promote contacts with Asian universities, which possess a huge teaching and research potential ranking internationally among the world's leading universities. One of the recent priorities is to increase efforts to recruit students from all over the world paying for their studies, to which end BUT's membership of several international organisations such as EUA or CESAER can be used. This is conditioned by an increase in the offer of degree programmes and courses taught in English, which is also the focus of attention. Last but not least, because of the geographic nearness and language similarity, Slovak students should continue to be recruited on a continual basis.

When recruiting international students, the university as a whole and its faculties and university institutes focused on offering all types of study at all levels but mostly on admitting good international students to Master's and doctoral programmes. In 2014 , too, the services and assistance were used of the South Moravian Centre for International Mobility (SMCIM), which is a long-time partner of Brno universities, among others, within the programme, Internationalization of Brno Universities. In 2014, SMCIM, through a competition, granted 23 start-up one-year scholarships to talented students from abroad. Another form of cooperation with SMCIM is BUT participating in the „So-MoPro II" programme, which aims to bring top international scientists to Brno universities.

In 2014 BUT continued to promote talented international students. 2,382,000 CZK was paid in regular scholarship to 46 students. A subsidy to the scholarship programme for BUT international students dramatically accelerated the internationalization processes at BUT. In addition to the above summaries, the demographic structure may be pointed out of the group that was granted the scholarship. It included students of the Russian Federation, Ukraine, Serbia, Belarus, Sudan, Syria, Kazakhstan and India.

The international student recruitment programme was also complemented by BUT participation in international and national education fairs. BUT took part in the GAUDEAMUS education fair held traditionally in Brno. Because of the geographic nearness and language similarity, BUT should continue to participate in the „AKADÉMIA Bratislava" fair. Last year BUT also participated in the second GAUDEAMUS fair in Nitra.

Every year, BUT takes part in an annual international conference and education fair held by the European Association of International Education (EAIE) in Prague last year. In keeping with the international cooperation priorities, BUT took part in education fairs in Asia (Taipei, Taiwan) and South America (Sao Paulo, Brazil).

Some existing teaching and research cooperation agreements were renewed and new signed with universities and other research and professional organisations and institutions such as College of Business and Technical Education (Doboj, Bosna a Hercegovina), École supérieure d'ingénieurs en électronique et électrotechnique – ESIEE Paris (Noisy-le-Grand), CyberGym (Hadera, Izrael), S. Toraighyrov Pavlodar State University (Pavlodar, Kazachstán), Institut für Mikroelektronik- und Mechatronik-Systeme IMMS (Erfurt), International Solar Energy Research Center Konstanz e. V. (Kostnice), State Polytechnic University (Petrohrad), Technical University in Košice etc.

Initial steps were also taken towards initiating cooperation with organisations and institutions from geographic areas where no significant activities of this type have yet been undertaken. In this connection, attention is centred, for example, around the possibility of starting cooperation with Australian universities.

As a major technical university, BUT undertakes other steps as an active member of international organisations focused on the development of closer and more specific cooperation between universities and educational and research institutions especially on a European scale. Let us name at least the European University Association (EUA), Conference of European Schools of Advanced Engineering Education and Research(CESAER), and EUniverCities.

b) University involvement in international educational programmes including mobility (Table 12.1)

Table 12.1: University involvement in international educational programmes

BUT	EU Educational and Vocational Programmes								Ceepus	Aktion	ME Development programme	Others	Total
	Erasmus	Comenius	Grundtvig	Leonardo	Jean Monnet	Erasmus Mundus	Tempus	Others					
Number of projects	2	0	0	0	0	1	0	2	10	6	4	4	**29**
Number of out-students *	661	0	0	0	0	0	0	4	22	52	91	29	**859**
Number of in-students**	415	0	0	0	0	8	0	0	22	56	45	144	**690**
Number of out-teachers***	171	0	0	0	0	0	0	16	32	13	56	70	**358**
Number of in-teachers****	46	0	0	0	0	1	0	0	28	4	3	77	**159**
Number of other out-persons	65												**65**
Number of other in-persons	11												**11**
Subsidy in thousand CZK	20.655	0	0	0	0	0	0	0	191	283,72	5.000	5.849	**31.978,72**

*Note: * = Out-students – students staying abroad in 2014, included are also students beginning their stay in 2013. Only students with stay--length longer than 4 weeks are included. If a university has another study-stay-length, this is noted below the table.*
*Note: ** = In-students – students staying at the university in 2014, included are also students beginning their stay in 2013. Only students with stay-length longer than 4 weeks are included. If a university has another study-stay-length, this is noted below the table.*
*Note: *** = Out-teachers – teachers staying abroad in 2014, included are also teachers beginning their stay in 2013. Only teachers with stay--length longer than 5 days are included. If a university has another study-stay-length, this is noted below the table.*
*Note: **** = In-teachers – teachers staying at the university in 2014, included are also teachers beginning their stay in 2013. Only teachers with stay-length longer than 5 days are included. If a university has another study-stay-length, this is noted below the table.*

c) BUT involvement in international research and development programmes including mobility

Table 12.2: BUT involvement in international research and development programmes

BUT	EC 7th framework programme			Total
	Total	including Marie-Curie-Actions	Others	
Number of projects	22	0	49	71
Number of out-students*	16	0	16	32

Number of in-students**	0	0	0	0
Number of out-teachers***	26	0	33	59
Number of in-teachers****	6	0	6	12
Subsidy in thousand CZK	145.699	0	26.137	

*Note: * = Out-students – students staying abroad in 2014, included are also students beginning their stay in 2013. Only students with stay--length longer than 4 weeks are included. If a university has another study-stay-length, this is noted below the table.*
*Note: ** = In-students – students staying at the university in 2014, included are also students beginning their stay in 2013. Only students with stay-length longer than 4 weeks are included. If a university has another study-stay-length, this is noted below the table.*
*Note: *** = Out-teachers – teachers staying abroad in 2014, included are also teachers beginning their stay in 2013. Only teachers with stay--length longer than 5 days are included. If a university has another study-stay-length, this is noted below the table.*
*Note: **** = In-teachers – teachers staying at the university in 2014, included are also teachers beginning their stay in 2013. Only teachers with stay-length longer than 5 days are included. If a university has another study-stay-length, this is noted below the table.*

d) Student and teacher mobility by country (Table 12.3)

Table 12.3: Student and teacher mobility by country ***

Country	out-students*	in-students**	out-teachers***	in-teachers****
Afghanistan		1		
Albania				
Algeria				
American Samoa				
American Virgin Islands				
Andorra				
Angola				
Anguilla				
Antigua and Barbuda				
Argentina	1			
Armenia				
Aruba				
Australia	4			
Azerbaijan				
Bahamas				
Bahrain				
Bangladesh				
Barbados				
Belgium	33	9	9	7
Belize				
Belarus				
Benin				
Bermuda				
Bhutan				
Bolivia				

Bosnia and Herzegovina		1	4	
Botswana				
Brazil				
British Indian Ocean Territory				
British Virgin Islands				
Brunei				
Bulgaria	12	26	18	19
Burkina Faso				
Burundi				
Cook Islands				
Curacao				
Chad				
Monte Negro	7	6	7	2
China			4	
Denmark	43	1	4	
Democratic Republic of Congo				
Dominica				
Dominican Republic				
Djibouti				
Egypt				
Ecuador				
Eritrea				
Estonia	16	5	2	2
Ethiopia				
Faroe Islands				
Falklands				
Fiji				
Philippines				
Finland	60	38	15	2
France	43	58	12	8
French Guyana				
French Polynesia				
Gabon				
Gambia				
Ghana				
Gibraltar				
Grenada				
Greenland				
Georgia	1			
Guadeloupe				
Guam				
Guatemala				

Guernsey				
Guinea				
Guinea-Bissau				
Guyana				
Haiti				
Honduras				
Hong Kong				
Chile				
Croatia	4	3	12	
India	5			
Indonesia			1	
Iraq				
Iran				
Ireland	1	1	1	
Iceland	4	4	1	
Italy	15	14	22	3
Israel	1	2	1	2
Jamaica				
Japan	3			1
Yemen				
Jersey				
South Africa				1
South Sudan				
Hashemite Kingdom of Jordan				
Cayman Islands				
Cambodia				
Cameron				
Canada			1	
Cape Verde Islands				
Caribbean Netherlands (Bonaire, St. Eustache, and Sabah)				
Qatar				
Kazakhstan		3		
Kenya				
Kiribati				
Keeling Islands				
Columbia		1		
Comoro Islands				
Republic of Congo				
Democratic People's Republic of Correa				
Korean Republic	1	4	2	
Kosovo				
Costa Rica				

Cuba				
Kuwait				
Cyprus				
Kyrgyzstan				
Laos				
Lesotho				
Lebanon				
Liberia				
Libya				
Liechtenstein	3			
Lithuania	21	14	11	8
Latvia	5	4	7	4
Luxembourg	0			
Macao				
Madagascar				
Hungary	4	2	3	1
Macedonia	4	7	5	3
Malaysia				
Malawi				
Maldives				
Mali				
Malta	10	7	2	
Man				
Morocco				
Marshall Islands				
Martinique				
Mauritius				
Mauritania				
Mayotte				
Mexico			1	
Micronesia				
Moldavia			2	
Monaco				
Mongolia				
Montserrat				
Mozambique				
Myanmar (Burma)				
Namibia				
Nauru				
Germany	77	21	24	10
Nepal				
Niger				

Nigeria				
Nicaragua				
Niue				
The Netherlands	18	1	2	1
Norfolk				
Norway	36			2
New Caledonia				
New Zealand				
Occupied Palestinian Territories				
Oman				
Pakistan				
Palau				
Panama			3	
Papua-New Guinea				
Paraguay				
Peru				
Pitcairn				
Ivory Coast				
Poland	7	17	8	3
Porto Rico				
Portugal	51	68	11	2
Austria	130	61	35	11
Reunion				
Equatorial Guinea				
Romania	3	11	7	2
Russia	5	6		4
Rwanda				
Greece	24	82	11	3
Saint Pierre and Miquelon				
Salvador				
Samoa				
San Marino				
Saudi Arabia				
Senegal				
Northern Mariana Islands				
Seychelles Islands				
Sierra Leone				
Singapore				
Slovakia	10	26	40	6
Slovenia	20	6	4	4
Somalia				
United Arab Emirates				

United Kingdom	67	11	20	7
United States of America	6	2	11	9
Serbia	4	2		1
Central African Republic				
Sudan				
Surinam				
Svalbard				
St. Helen				
St. Lucy				
St. Bartholomew				
St. Kitts and Nevis				
St. Martin (French part)				
St. Martin (Dutch part)				
St Thomas and Prince Island				
St. Vincent and Grenadines				
Swaziland				
Syria				
Salomon Islands				
Spain	45	106	18	5
Sri Lanka				
Sweden	26	2	6	2
Switzerland	14	3	5	2
Tajikistan				
Tanzania				
Thailand				
Tai-Wan		14		2
Togo				
Tokelau				
Tonga				
Trinidad and Tobago				
Tunisia				
Turkey	15	40	6	15
Turkmenistan				
Turks and Caicos				
Tuvalu				
Uganda				
Ukraine				5
Uruguay				
Uzbekistan				
Christmas Island				
Vanuatu				

Vatican				
Venezuela				
Vietnam				
East Timor				
Wallis and Futuna				
Zambia				
Western Sahara				
Zimbabwe				
Other countries				
Total	**859**	**690**	**358**	**159**

*Note: * = Out-students – students staying abroad in 2014, included are also students beginning their stay in 2013. Only students with stay--length longer than 4 weeks are included. If a university has another study-stay-length, this is noted below the table.*
*Note: ** = In-students – students staying at the university in 2014, included are also students beginning their stay in 2013. Only students with stay-length longer than 4 weeks are included. If a university has another study-stay-length, this is noted below the table.*
*Note: *** = Out-teachers – teachers staying abroad in 2014, included are also teachers beginning their stay in 2013. Only teachers with stay--length longer than 5 days are included. If a university has another study-stay-length, this is noted below the table.*
*Note: **** = In-teachers – teachers staying at the university in 2014, included are also teachers beginning their stay in 2013. Only teachers with stay-length longer than 5 days are included. If a university has another study-stay-length, this is noted below the table.*
*Note:***** = Table 12.3 Student and teacher mobility by country lists all countries; this is facilitate the processing of the data by the MEYS. It should not present a difficulty for universities when entering data. If no mobility exists for a country, please, do not enter any data.*

QUALITY ASSURANCE AND EVALUATION OF ACTIVITIES CARRIED OUT

a) Internal audits of the quality of teaching

In charge of the quality assurance is BUT Quality Department as part of Rector's Office, answering directly to the BUT Rector – who regularly inspects this department. The Quality Department activities control those at faculties through methodology guides and services provided. The relevant staffs at faculties are appointed by faculty managements.

The BUT Quality Department monitors the quality of all the main processes (that is, the quality of the system of management, education, creative activities, cooperation with the external sphere, internationalization), next the quality of the supporting processes (finance, auditing, administration, etc.). The quality of the system of management permeates all other areas.

The organisational structure of the Department of Quality has a matrix form, which means that each of the above quality assurance areas is managed by a QD person in charge in cooperation with the relevant vice-rector or bursar in the case of supporting processes. The quality of the system of management permeates all other areas.

The internal quality management system at BUT is focused on two major areas: quality assurance and quality auditing.

Quality assurance involves systematic building of environment favourable for the creation of quality products /results. Quality assurance is based on analysing processes, setting up process roadmaps, setting the main performance indicators, etc. These activities are carried out on a continual basis using the ISO system known to be efficient for this purpose and, for universities, verified by the IPN Kvalita. The results obtained by the Quality Department are passed on to the university academic top management for further use.

In a form tailored for the university environment and activities, BUT uses the EFQM Model of Excellence for internal quality audits. The first experience and results were obtained in 2014 from a pilot project as part of the IPN Kvalita. It is used as a decision-making support instrument by the BUT top management.

Quality of teaching assurance and internal audits

Systematic teaching quality assurance and audits are carried out at all BUT faculties and constituent parts where courses are offered. These activities are governed by the faculty managements and degree-programme-boards including persons in charge of course curricula as well as the members of the BUT Quality Council at faculties. The parties/bodies involved deal with problems as they come meeting regularly at least once at the end of each semester to summarize the results and set new tasks for improvement. Meetings are also held before teaching in courses starts at the beginning of each semester; inspected are the curricula contents, the methodology used, and the preparedness of the teachers. The inspection methods used include sitting in on classes, targeted pedagogic consultations and exchange of experience among the academics.

Rules and suggestions for managing the quality of teaching:

– the teaching quality management is governed by the current BUT in-house rules in the first place,
– previous experience from the finished projects is used, especially national ones such as IPN Q-Ram, IPN PTPO, and IPN Kvalita),
– provisions of the national and international positional documents are also applied (such as ESG, Part I, the ISO system of international standards).

In conformance with the ESG, Part I recommendations, BUT, for example:

– promotes cooperation with secondary schools to get better applicants for study,

– internal rules are drawn up and published covering education including a manual of quality, a detailed guide of study fields for the purposes of the DS and DTC Labels,

– a method has been devised for designing and setting up new study fields including the courses submitted for accreditation,

– at some faculties, an education style has been gaining the upper hand based on teaching outcomes, including all the pre-requisites necessary for particular teaching style (pronounced individual approach to students, increased participation of students in teaching, support for self-reliant and pro-active students, combination of processes of formative and summative assessment). Experience is exchanged at BUT in an organized and systematic manner and these new approaches to the educational process are promoted at seminars, etc.,

– interdisciplinary education is monitored and receives positive evaluation; as part of internationalization, teacher and student mobility is monitored and evaluated,

– much attention is given to ensuring the needs of students, including consulting services focused, for example, on teaching, sports and healthcare.

Students also systematically participate in internal auditing:

– feedback from the students is regarded as an integral part of assuring the quality of teaching being co-organized regularly by the faculties and the student chambers of the academic senate at the end of each semester,

– enquiries among students on teaching quality is managed autonomously by each faculty once or twice a year using electronic or paper questionnaires on the content of the courses taught, the method of teaching, and the competence and approach by the teachers,

– there are plans for future integration of the student feedback in the BUT evaluation and for use of its results,

– student enquiries and interviews are efficient tools for obtaining authentic student feedback, of course, provided that a suitable way of communication is found open on both sides,

– the results of the student feedback are summarized via the intranet to form a clear report to be then archived,

– the results of the student feedback are taken into account by the faculty and department managements as a partial information resource for the overall evaluation of teachers when checking on their teaching methods,

– a student initiative organized by the student chamber of the academic senate is gaining ground, which selects top 10 teachers at faculties and at BUT using enquiries among students.

Detecting plagiarism in qualification and other projects:

It is the duty of each supervisor to guarantee the originality of their student's work. To this end, in addition to their own expertise in a given field, they may use a module available on the BUT IS for the detection of plagiarism. It is based on calculating the concordance with other projects in a database and with all the texts using the Google search. In this way, however, only the plagiarisms of the text parts of the final projects can be detected; there is no way yet of detecting plagiarisms in the drawing documentation, for example. Another method of preventing plagiarism is the compulsory publishing of final projects. Both teachers and students give due attention to plagiarism-related issues.

Enquiries were conducted into the respondents' motivation, experience, and views on plagiarisms, such s one carried out at the beginning of the spring semester of 2013/2014 among the students of the Faculty of Electrical Engineering and Communication. It was implemented through the Apollo IS. Students answered 5 question groups: 1. What type of violating the rules of academic ethic they had witnessed during their studies; 2. What was the failure-rate percentage of such attempts at cheating; 3. What sanctions were imposed if cheating was detected; 4. What situations and circumstances they thought might justify a certain violation of academic rules; 5. How many times they themselves had violated rules of academic ethics. There were 215 student respondents, which is a sample size justifying the relevance of the results obtained.

b) External quality audits, particularly by the Accreditation Commission Czech Republic

In 2014, the Accreditation Commission Czech Republic carried out no external quality audit at any BUT constituent part.

In 2013, BUT was audited by the EUA/IMP with a periodicity of four years. With a periodicity of two years, a feedback enquiry is carried out into the views of graduates on the short-term and long-term usefulness of their study with systematic cooperation with the graduates' employers to find out what they require and what they think of the fresh graduates hired.

The outcomes of internal and external audit are used for improving the quality of teaching and its outcomes, for innovations and enhancement of the course curricula, for improving the teaching methodologies and the teachers' competences. The ever increasing teacher-teacher, student-student, teacher-student cooperation leads to better informing, communication, better cooperation and increased trust.

c) Financial audit at BUT in 2014

An audit was carried out at BUT in 2014 pursuant to Act no. 320/2001 Coll. concerning financial auditing and pursuant to BUT in-house standards. Each year a selected sample of operations is used to test the setting of internal auditing systems.

A reasonable efficiency of the internal auditing system was verified in late 2014 based on a regularly planned independent internal audit across the whole university. The audit verified conformance with the legal regulations with partial shortcomings where the audit trail discovered minor deviations being put right already during the inspection.

A risk evaluation process is set at BUT. In 2014, a map of risks was made for each BUT part as well as for the whole university. Meetings concerning the identification of all-university risks and assessment of their graveness took place on the rector's advisory board, particularly by the University Risk Management Committee. Based on the evaluation of the risk map for 2014, a timetable was set up of internal audits and inspections.

In 2014 the Inspection and Internal Audit Department carried out a total of 31 audits. The scheduled internal audits focused on the RDI OP projects implemented at BUT in priority axes 1 to 4 with BUT having the role of subsidy beneficiary and partner. Internal audits had two main objectives. In the case of already finished projects, their overall implementation was evaluated concerning the fulfilment of obligations as implied by the annex, Decision to grant a subsidy and monetary performance. The system settings of projects at implementation stages were the subjects of internal audits and the costs were verified using a sample of operations carried out in the relevant period audited. The results, findings, and recommendations were then discussed by the BUT management with appropriate measures undertaken.

d) Quality certificates obtained

A successful surveillance audit was carried out at the BUT Rectorate and other constituent parts to inspect the quality of the system of management as required by the ČSN EN ISO 9001:2009 international standard, Systems of quality management – Requirements. Also, at the Faculty of Business and Management, the first surveillance audit was carried out by the above standard. To assure the quality of the BUT system of management, the certification area was extended to the Faculty of Mechanical Engineering where the first certification audit was successfully carried out, too. It should be noted that all the above audits were carried out by an external independent and organisation accredited for conducting quality management system audits.

1) Rectorate and other constituent parts:

• A second surveillance audit was carried out at the BUT Rectorate and other constituent parts by an external independent and organisation accredited for conducting quality management system audits (on 8th and 9th December 2014). No system inconsistency was found by this audit or any comments made. Only strengths were pointed out and suggestions given for improving the system of quality management.

• A pilot data collection for Key Performance Indicators (KPI) at the Rectorate and other constituent parts and a draft report to the BUT top management: data for the key performance indicators were collected at the Rectorate and other constituent parts at several levels: indicators needed by heads for managing; indicators reported by heads to the top management; indicators reported outside BUT; indicators that should be followed; indicator feedback. A total of 216 indicators were collected at the mid-level. This will be followed this year by a decision of the top and mid management which indicators should be followed. The outcome could be a central report for the top management.

• A enquiry was designed to be carried out to find out about the satisfaction of the BUT faculties with the services provided by the Rectorate and other constituent parts (management and auxiliary processes). The aim is to improve communication between the process owners, process implementation and harmonization. The enquiry should focus on the follow-up processes of organisation units in terms of the links between the Rectorate and the faculties, that is, the feedback should only be shared by the process participants concerning the "process workflow".

• IS Apollo: PROCESY module – to be created and added to the 400 processes mapped at the Rectorate and other constituent parts level 2 via the new Process map of the 2nd distinguishing level. Implementation on the Apollo IS platform: PROCESY module : The 2nd level process map was created consisting of control, main, and auxiliary processes further broken down to block diagrams providing a managerial view of all the processes implemented at the Rectorate and other constituent parts.

• Revision of the internal audit processes of the quality management: the Revision of the internal audit processes of the quality management was made to know whether the approach chosen, the control documentation, and auxiliary records still meet the BUT needs. The aim is for the internal audits of the quality management systems to bring maximum value added in obtaining information on the states of the processes.

• Training of the internal auditors of the quality management system on the ČSN EN ISO 9001:2009 standard (Rectorate and other constituent parts, Faculty of Mechanical Engineering, Faculty of Business and Management): on 27th November 2014 training of the internal auditors of the quality management system was held at the Faculty of Mechanical Engineering divided into the following thematic units: philosophy of internal audits, process of an internal, what is required of the auditors, system and process audits, ISO 9001 requirements, methodological instructions and suggestions in the BUT environment.

2) Faculty of Business and Management:

A surveillance audit was carried out at the Faculty of Business and Management on 20th and 21st October by an independent and accredited certification body. No system inconsistencies were found or comments made. Only the strengths were pointed out and recommendations made to improve the quality of the system of management.

3) Faculty of Mechanical Engineering:

• Monitoring the processes at the Faculty of Mechanical Engineering – at the Faculty of Mechanical Engineering, processes are monitored on a continual basis depending on the needs of managers and process owners. Emphasis is placed on the value added by the outcomes in terms of management and the necessity to formalize the process implementation rules.

• Determining the actions necessary to achieve conformance of the FME system of management with the ČSN EN ISO 9001:2009 standard, Quality management systems – requirements:

a) Internal audits of the quality management system (QMS) – completely new with new system settings.

b) Quality manual – a new document on the FME system of management and its conformance with the ISO 9001 standard.

c) Internal audit of the FME quality management system prior to an external certification audit. Before the actual certification audit by an external independent and accredited certification body, a first- and second-order internal system audit was held.

d) Organizing informative meetings for selected groups of employees – selected groups of employees were trained before the actual certification audit.

e) Inviting tenders for an external independent and accredited certification body. The actual implementation of the tender. The tender was implemented in conformance with the current legal regulations and BUT internal standards.

f) Certification audit by an external independent and accredited certification body. Based on a tender, an external independent and accredited certification body was chosen. The certification audit was implemented from 1st to 3rd December 2015 by a team of 3 external certification auditors (as required by a methodological instruction of the Czech Institute for Accreditation). Based on the certification audit, the certification body issued the following documents: First- and second--order audit report. The certification audit was successful proving hundred-percent conformance of the FME system of management with the requirements of the ČSN EN ISO 9001:2009 standard. It was decided that a three-year certificate should be issued.

4) Faculty of Electrical Engineering

Initial meetings started. At present a suitable alternative software solution is being selected for surveying the processes and enabling access for selected user groups. The proposal will be approved by the BUT management. After these activities, the actual process survey should be started. The aim is to have a uniform university SW solution for modelling processes and a uniform SW solution for selected user groups.

5) Other activities implemented / worked on

• In cooperation with the HR and finance and accounting departments, a design continues to be worked on of a system for employee development and evaluation (Directives, system setting, IS setting, pilot testing).

• Organizing national meetings of staffs concerned with quality at universities in the Czech Republic. Regular participants from: Brno University of Technology, Czech Technical University in Prague, Janáček Academy of Music, VŠB-Technical University of Ostrava, University of Entrepreneurship, West Bohemian University, College of Polytechnics Jihlava, and University of South Bohemia in České Budějovice.

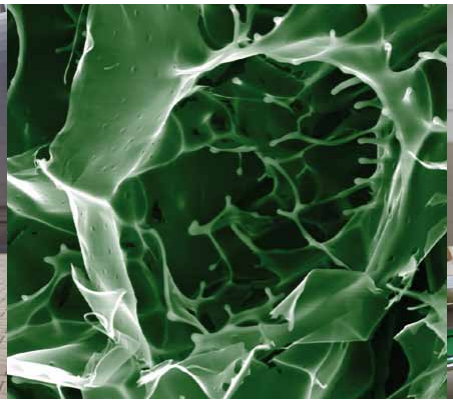
e) Benchmarking with similar universities in the Czech Republic or abroad

In 2014 BUT took part in no international benchmarking because of the long geographic distances, high participation costs and necessity to fulfil other duties.

• Ranking
  – For the second time, BUT as a whole and four of its faculties participated in an international U-Multirank enquiry, the BUT system authors are provided with feedback of the methodology.
  – For several subsequent years, BUT has been following closely other international rankings and their results to learn about its strengths and weaknesses.

f) Evaluation of educational activities outside the university (consulting centres, distant learning centres, etc.)

No evaluation of educational activities outside the university was made as there are no BUT subsidiaries.



UNIVERSITY'S NATIONAL AND INTERNATIONAL EXCELLENCE

a) BUT membership in international associations, organizations, and societies

Table 14.1 BUT membership in international associations, organizations, and societies

International organizations	Country	Status
Academy of International Business	USA	member
Academy of Materials and Manufacturing Engineering	Poland	
ACM	USA	member
Advisory Group for Aeronautics in FP6, Brussels		
AEEA-EAAE (Association europeenne pour l'enseignement de l'architecture-European Association for Architectural Education,		
AESOP – Association of European Schools of Planning		
AIB – Academy of International Business	USA	member
Air Infiltration and ventilation centre ECBCS IEA		
American ceramic Society,	USA	
American vacuum Society		
APA, division 35 Society for the Psychology of Women	USA	member
ASM – American Society for Materials	USA	
ASME	USA	member
Berkeley Initiative in Soft Computing	USA	member
British Sociological Association	UK	member
CEWS – Center of Excellence Women and Science	Germany	member
CESAER – Conference of European Schools for Advanced Engineering Education and Research	USA	member
CIB – Conseil International du Bâtiment / International Council for Building		
Cisco Networking Academy	USA	CCNA and CCNP instructor
COST Action 615, Action G3, Action 633, Action P20, Action 0806 Particles		
Danube Rectors Conference	Austria	
DOCOMOMO International Documentation and Conservation Modern Movement		
EACES	UK	member
ECBCS International Energy Agency (IEA)		
ECSB – European Council for Small Business) EU (touring selected EU countries)	Finland	vice-president for CR
EIASM – European Institute for Advanced Studies in Management	Belgium	member
EIBA – The European Business Academy	Belgium	member
Electrochemical Society	USA	
EMAC – The European Marketing Academy		member
EPWS – European Platform of Women Scientists	Belgium	member
European Association for Language Testing and Assessment, Lancaster University	UK	
European Biometrics Forum	EU	member
European League of Institutes of the Arts – ELIA		member
European Quality Association for Recycling e.V. (EQAR)		
European Society for Artificial Organs		
European Society for Engineering and Medicine – ESEM		

European Structural Integrity Society		
Europäische Vereinigung für Unfallanalyse und Unfallforschung e.V. – European Association for Accident Research and Analysis		
FIB – Fédération internationale du béton / International Federation for Structural Concrete		
Gesellschaft für Informatik	FRG	member
GBATA (Global Business and Technology Association)	USA	board member
Heat Transfer Education Committee ASME		
IABSE – International Association for Bridge and Structural Engineering		
IASS – International Association for Shell and Spatial Structures		
ICAS – International Council of the Aeronautical Science		
IEEE – Institute of Electrical and Electronics Engineers USA	member	
IFToMM – International Federation for the Promotion of Mechanism and Machine Science		
International Association for Cross-Cultural Psychology	USA	member
International Institute of Forecasters	USA	member
International Journal of General Systems	USA	editorial board member
International Journal of Applied Research in Business Administration and Economics	Australia	editorial board member
International Project Management Association		
Journal of Enterprise Resource Planning Studies	USA	editorial board member
Journal of Global Business and Technology	USA	editorial board member
International board for Summer Conferences on Topology and Applications		
International union for vacuum sciences, technologies, and applications (IUVSTA)		
PRIME Networking	Belgium	founding member
Rehva – Federation of European Heating and Air-conditioning Association		
SIETAR UK – Society for Intercultural Training, Education and Research United Kingdom	UK	member
Society of Computational Economic	USA	member
Society for Materials Research	USA	
The International Society of Difference Equations	USA	member
The Society for the Psychological Study of Social Issues	USA	member
Transformation in Business and Economics	Latvia	editorial board member
UNESCO/UIA – Validation Committee for Architectural Education		
WTA – International Wissenschaftlich-Technische Arbeitsgemeinschaft für Bauwerkserhaltung und Denkmalpflege		

b) BUT membership of professional associations, organisations, and societies

Table 14.2 BUT membership of professional associations, organisations, and societies

Professional organisation	Country	Status
ACM	USA	member
Association of University Libraries	CR	executive committee member

AMSAT-DL		
AMSE		
AS-International		
Association of Moravia Designers in Union of Artists of CR		
Association of Mechanical Engineers		
Association of Forensic Engineers of the Czech Republic		
Centre for Research of Information Systems, specialised sections of the Czech Society for System Integration	CR	chairman
CESNET z.s.p.o.	CR	member, supervising board chairman
Cisco Networking Academy	USA	CCNA and CCNP instructor
CIRED		
CREA Hydro & Energy		
Czech Concrete Society		
Czech Physical Society		
Czech Logistic Association	CR	member
Czech Marketing Association	CR	FBM collective membership
Czech Foundry Society		
Czech Chemical Society	CR	member
Czech Society for Quality	CR	member, QA certification(Quality Auditor) and QM (Quality Manager)
Czech Society for Quality	CR	founder of specialised group for creation and innovations, chairperson
Czech Society for Cybernetics and Informatics		
Czech and Slovak Society for Soil Mechanics and Geotechnical Engineering	CZ/SK	member of executive committee, member
Czech Welding Society		
Czech Vacuum Society		
Czech Society for New Materials and Technologies		
Czech-Moravian Psychological Society	CR	member
Czech Normalisation Institute	CR	member
Czech Moravian Psychological Society	CR	member
Czech Chamber of Authorised Engineers and Technicians Active in Building		
Czech Society for Non-Destructive Testing		
Czech Society for Mechanics		
Czech Union for Civil Engineers		
Czech Union of Scientific and Technological Societies		
DeviceNet Organization		
DILIA	CR	collective member
EMAC – The European Marketing Academy	Belgium	member
ESA – European Space Agency		
ETAP Network – European Taxation and Accounting in Practice	France	founding member
EUNIS-CZ z.s.p.o.	CR	committee member

European Biometrics Forum	EU	member
Gesellschaft für Informatik	SRN	member
ICOM – The International Council of Museums		
IEEE (Institute of Electrical and Electronics Engineers)	CR	IT manager of Czech-Slovak section
IFAC		
IMAPS Czech and Slovak chapter		
International Association for Cross-cultural Psychology	Germany	member
International Society of Electrochemistry – ISE		
International Solar Energy Society – ISES		
International Union of Radio Science		
Interoperability of Railway Infrastructure (national technology platform)	CR	director
Engineering academy of the Czech Republic		
Union of Czech Mathematicians and Physicists		
LonWorks Association		
Moravian Association of Female Entrepreneurs and Managers	CR	chairperson of honour
National Association of AKTOP Experts and Institutions in Knowledge and Technology Transfer		
P-Net		
Working Group for the Preparation of the ISO 26 000 International Standard	CR	member
SPIE Europe – International Society for Optics and Photonics		
Society for Project Management	CR	member
Society for Radioelectronic Engineering		
SUAleph	CR and SR	chairman
Union of Czech Booksellers and Editors	CR	member
Technical Commission of the International Normalisation Organisation		
Technological Platform of Energy Security		
Association for Railway Infrastructure	CR	member
Association of Accountants and Tax Advisers	CR	board member
Society for Ethics in Economy	CR	board member
Society for Project Management	CR	member
Association for Rehabilitation of Concrete Structures		
Society for Environmental Technology		
Union of Czech Booksellers and Editors	CR	member
Czech National Committee for Hydrology	CR	member
Editorial Board of Journal of Hydrology and Hydromechanics	international	member
The European Confederation of Language Centres in Higher Education – CERCLES	international	member
Association of Libraries	CR	member
WTA International		
WTA CZ	CR	chairman
International Union of Testing and Research Laboratories for Materials and Structures (RILEM	international	member
World Road Association (PIARC)	France	member

c) BUT's national and international awards in 2012

Brno University of Technology is one of the two Czech universities to have obtained the prestigious ECTS DS Labels in 2009. These were awarded to the university in recognition of its quality as a higher-education institution in the 2009-2013 period. After their expiration, both certificates contributing to the university's internationalization were extended for the 2013-2016 period.

The ECTS Label certificate is awarded for the correct credit system implementation in all Bachelor's, Master's, and doctoral degree programmes compliant with the Bologna process. This is the most prestigious European award in tertiary education. The European Credit Transfer and Accumulation System (ECTS) facilitates more transparent recognition of courses completed at universities abroad, thus directly promoting student mobility within the European space and beyond.

For several years in succession, BUT has been ranking among the world's best universities of the QS Quacquarelli Symonds Limited ranking. In 2014, BUT took the 651th – 700th place. It received the most points in Engineering & Technology (258th place) with the best result received in the Civil & Structural Engineering category (place 101 – 150). This reflects the excellent research and development conducted at BUT and its good reputation with the domestic and international scholars and employers. Apart from this, the ranking also takes into account the degree of the university's internationalization.

d) BUT evaluation by a team of international experts

No international accreditation took place at BUT in 2014.

UNIVERSITY DEVELOPMENT

a) BUT involvement in MEYS centralized development projects (Table 15.1)

Table 15.1: University involvement in MEYS centralized development projects in 2013 (only for public universities)*

BUT	No. of projects approved	Funding received in thousand CZK**	
		Capital	Ordinary
Personality Development Leading to Good Student Careers	2	1.566	0
Sharing knowledge and laboratory capacities for biomedical engineering and bioinformatics	2	1.833	1.747
Total		**3.399**	**1.747**

*Note: * = In the No. of projects approved column, enter all projects in which the university is involved (not only those that it coordinated)*
*Note: ** = In the Funding received in thousand CZK column, enter the funding that the university received not the total sum of a project that the university coordinates.*

b) BUT institutional development plan, its evaluation and achievement of goals in accordance with the 2014 Declaration of Development Programme for Universities (Table 15.2)

Table 15.2: BUT institutional development plan for 2014 (only for public universities)

BUT		Funding received in thousand CZK		Fulfilment of the set objectives/ indicators	
	Institutional development plan	Capital	Ordinary	Initial status	End status
Quality and relevance					
1.1	Integrated BUT internal quality management system		6.000	1st certification of Rector's Office, ISO 9001:2009 at FBM	2nd certification of Rector's Office, recertification of FBM, process audit at FME
1.2	Implementing the EUA recommendations in line with the preparations at BUT of the reform of Czech universities		600	Work group established	Rector's advisory body established
1.3	Support for strategic and quantitative analyses at BUT		600	Pilot studies to be carried out	Carrying out external environment analyses, SWOT analysis, etc.
1.4	Support for BUT publishing excellence		15.000	325 WOS publications	355 WOS publications
1.5	Support for intellectual property rights protection at BUT		1.800		
1.6	Support for first-year students		3.500		476 FORMULE Student project supported
1.7	Support for talented students		1.700		
1.8	Support for External Relations Office		1.000	240 students taking part in a survey	350 students taking part in a survey

1.9	Extending the activities of the Centre of Support for Projects for the academic community		1.100	850 employees attended courses, 80 courses offered	1443 employees attended courses including 14 DPS course attendees and 351 language course attendees. 153 courses offered including 107 specialised ones (including DPS and language courses)
1.10	Support for activities of the Lifelong Learning Institute for the academic community		2.100	850 course attendees, 80 course planned	1443 course attendees, 153 course planned
1.11	Libraries – services		1.750	Number of visits (authenticated loggins):1000, new bX service established (paper delivery) 0, number of CitacePRO system users: 1000	Number of visits (authenticated loggins):25000, new bX service established (paper delivery) 0, number of CitacePRO system users: 1500
1.12	Career systems, career progression		1.000	zero	ethical code being approved
1.13	Support for university self-government and autonomy		500	zero	TOP0 competition introduced, two articles in the BUT News magazine with information on the results of the student enquiry
Openness					
2.1	Support for BUT marketing and presentation at home and abroad		2.500	participation in 2 domestic and 5 international fairs	participation in 2 domestic and 5 international fairs
2.2	Support for joint master degree programmes at BUT increasing the number of degree programmes taught in foreign languages		1.500	Number of students supported 18	Number of students supported 23
2.3	BUT cooperation with elementary, secondary, and vocational schools		1.200	5 competitions for secondary schools, presentation of creative activities. Scholarships for students involved in the project	5 competitions for secondary schools, presentation of creative activities. Scholarships for students involved in the project
2.4	Support for BUT international cooperation		4.200	Bilateral, partial, and master international agreements (new and renewed) 50	Bilateral, partial, and master international agreements (new and renewed) 123
2.5	Support for BUT international teacher mobility		2.200	35 outgoing / 16 incoming	49 outgoing / 15 incoming
2.6	Support for BUT international student mobility		5.000	student-months 316.25	student-months 405

2.7	Support for handicapped BUT study applicants		1.300	services provided 800, individual consultations 300, group activities 500	services provided 1314, individual consultations 759, group activities 519
2.8	Support for U3A development at BUT	180	620	1.975	2.161
Efficiency					
3.1	Preparing a mid-term and long-term conception		1.300	preparatory work	long-term conception and strategy
3.2	Development of study computing network and main data centre	1.400	2.000	0 virtual desktops, number of degree projects in the database before 1998–979	100 virtual desktops, number of degree projects in the database before 1998–4297
Total		**1.580**	**58.470**		



ACTIVITIES OF THE BUT ACADEMIC SENATE

In 2014, Academic Senate (BUT AS) convened in 10 regular and 1 special meetings. The standard topics were legislation, economics, teaching, and creative activities. As the term of office expired in October 2014, new BUT AS was elected; two of the above meetings were those of the new BUT AS.

At the January BUT AS meeting, doc. Ing. Jakub Fischer, Ph.D., Chair of the University Council (UC) made his presentation. In legislation, BUT AS discussed and approved changes in the internal regulations of BUT and its faculties and university institutes as well as other documents of the university institutes governed by the BUT AS. Important meetings concerned the budget rules and the subsequent approval of the BUT 2014 budget. In view of the BUT long-term strategy, BUT AS regularly made statements concerning legal and property issues (purchase and sale or gratuitous acquisition of real property, easements). Next in 2014, BUT AS discussed and approved the BUT 2013 annual report on activities and management and the 2015 amendment to the BUT Strategic Plan. Before being discussed by the BUT AS, all the issues were subjected to detailed analyses by the working committees. The BUT AS activities in 2014 received standard backing from the BUT AS Office.

Legislation Committee of the BUT AS (LC) convened at 8 meetings in 2014 (including two of the new BUT AS elected in November), adopting recommendations for the BUT AS concerning amendments to the internal regulations of BUT, faculties, and university institutes, and issuing directives for admissions at university institutes. In 2013, too, cooperation with the Administration Office was of considerable help.

Economic Committee of the BUT AS (EC) convened at 15 meetings in 2014, discussing in detail the BUT 2013 annual report on management and passing it to the BUT AS for approval, budget rules, and the BUT budget for 2014. Also numerous legal and property issues were discussed and recommended for approval by the BUT AS.

Pedagogic Committee of the BUT AS (PC) convened in 2014 at the first standard meeting discussing issues of teaching load measurement and helping the student chamber (SC) of the BUT AS prepare student enquiries to choose the most popular BUT teacher.

Committee for Creative Activity of the BUT AS (CCA) convened at four regular and two special meetings in 2014 to discuss specific research; next it continued to deal with the ways of applying the results in RIV, problems related to the TOP evaluation, particularly concerning the products and in cooperation with the vice-rector for creative development, the specific research funding in 2014 was discussed, focussing on the interfaculty specific-research projects.

As its term in office was drawing near, in April, the BUT AS announced elections of a new academic senate for the November 2014 to November 2017 period approving the election timetable. This election took place at the BUT faculties and university institutes from 3rd to 5th November 2014. At the BUT AS establishing meeting held on 18th November 2014, the new BUT AS chair and deputy chairs were elected (KAP and BUT AS SC chairs) and new working committees with chairs set up.

At a BUT AS special meeting held in late June at Mikulov, in addition to the standard discussion of amendments to the internal regulations of BUT and its faculties and of legal property issues, as part of the development project, support for the self-government and autonomy of universities, a seminar was held in the presence of BUT rector prof. RNDr. Ing. Petr Štěpánek, CSc., and all BUT vice-rectors; at this seminar, presentations were made by chair of the University Council doc. Ing. Jakub Fischer, Ph.D. on strategic and economic topics for universities in the Czech Republic; vice chair of the University Council prof. RNDr. Tomáš Opatrný, Dr. on the methodology of RIV, RVVI evaluation, and; vice chair of the UC Legislation committee JUDr. Marek Hodulík on the preparation of a new university act.

By its representatives in the UC, at each of its meetings, BUT AS will continue to be informed in detail of the meetings of the UC steering committee and of the UC assembly. Senator RNDr. Popela, who is the chair of the UC working committee for strategy and development of universities, was re-appointed for a working committee of the MEYS set up to prepare an amendment to the university act, regularly participating in its meetings. Chair of BUT AS doc. Hanáček continued to take part in the meetings of the UC working committee consisting of the chairs of university academic senates. The UC delegates, some of whom being also BUT senators, also took part in the discussions and commenting on this amendment in the UC working committees. They regularly informed the BUT AS on such meetings as well as of other UC meetings they attended. Prof. Vávrová took part in the meetings of the Academic Senate of the Academy of Sciences of the Czech Republic, as a representative of the UC.

The Student Chamber (SC) of the BUT AS focused on three large projects in 2014. In cooperation with the faculty SC's and other student organisations at BUT, it wrote, edited and published a guide for the BUT fresh first-year students. The SC put into pilot operation the first Internal Fund to support student projects, which had been used to finance 17 successful student projects. The SC also made every effort to promote a student enquiry to choose the best BUT teacher attended by over 40% of students. The student senators also worked in various BUT working committees; along with a representative of teachers, they also worked in the Supervisory Council of Dormitories and Canteens and helped evaluate specific research. SC representatives took part in a conference of academic senators organised by the SC of the UC where, for example, the amendment to the university act or cooperation between the BUT AS and UC AS student chambers were discussed. In 2014 the SC initiated and, by two meetings, supported cooperation between the SC and BUT student organisations.

Documents discussed at BUT AS meetings from January to December 2014:

Legal affairs:

- Amendments to the BUT Study and Examination Rules – January
- Annex no. 1 to Rector's directive no. 1/2010 concerning study fees – January
- Directive of the director of BUT IFE concerning admissions at IFE for the academic year 2014/2015 – January
- Annex no. 7 to the Organisational Rules of the BUT Rectorate – January
- Detailed organisational instructions for the by-election of student representatives of university institutes and other BUT constituent parts in the BUT AS – January
- CEITEC documents – new versions of CEITEC Statutes, STI SB Rules of Order, CEITEC Director directives for admissions for doctoral students at CEITEC for the academic year 2014/2015 – January, February
- Nomination of BUT vice-rectors for the 2014 to 2018 term – February, March, April
- Nomination of BUT Disciplinary Committee members – February, March
- Preparation of elections for the BUT AS for the term of 2014 to 2017 – rough dates – March
- Timetable and announcement of election to the BUT AS for the 2014 to 2017 term – April
- New version of the Organisational Rules of the BUT Dormitories and Canteens – April, May
- New version of the statutes of BUT Faculty of Fine Arts – April, May, June, September
- Announcement of the election committee for the election of the BUT AS and nomination of its chair – June
- Nomination of the election committee for the BUT university institutes and other constituent parts – June
- Directive of the Director of BUT IFE concerning the admissions at IFE for the academic year 2014/2015 for the P3917 Forensic Engineering doctoral programme – June
- New version of the Organisational Rules of the BUT Rectorate – June
- Addendum no. 2, the BUT Payroll Regulation – June
- New version of the Election and order rules of the Academic Senate of the BUT Faculty of Electrical Engineering and Communication – June
- New version of the Election and order rules of the Academic Senate of the BUT Faculty of Mechanical Engineering – June
- Addendum no. 4 to the Election and Order Rules of the BUT AS – June, September, October
- Detailed instructions for the election of the representatives of the BUT faculties and other constituent parts in the BUT AS for the term of 2014 to 2017 – September
- BUT Ethical Code – November, December
- Directive of the Director of BUT IFE concerning the admissions at IFE for the academic year 2014/2015 for the N3917 Forensic Engineering and N3950 Risk Engineering doctoral programmes – November, December
- Directive of the Director of BUT IFE concerning the admissions at IFE for the academic year 2014/2015 for the P3917 Forensic Engineering doctoral programme – November, December

Economic affairs:

- Proprietary affairs – see bursar's letter ref. 273/90310/2013 of 02.12.2013 – January
- Rules for allocating contributions, subsidies, and other BUT funding for 2014 – January, February
- Proprietary affairs – see bursar's letter ref. 26/90310/2014 of 17.02.2014 – February, March,
- Proprietary affairs – see bursar's letter ref. 45/90310/2014 of 10.03.2014 – March, April

• BUT budget for the year 2014 – April, May
• Proprietary affairs – see bursar's letter ref. 95/90310/2014 of 19.05.2014 – June
• Proprietary affairs – see bursar's letter ref. 101/90310/2014 of 29.05.2014 – June
• Addendum no. 1 to the BUT budget for 2014 – June
• Proprietary affairs – see bursar's letter ref. 119/90310/2014 of 18.06.2014 – June, September
• Proprietary affairs – see bursar's letter ref. 127/90310/2014 of 25.06. 2014 – June, September
• Proprietary affairs – see bursar's letter ref. 151/90310/2014 of 31.07.2014 – September
• Addendum no. 2 to the BUT budget for the year 2014 – September, October
• Rules for the setting up of the BUT budget for the year 2015 – October, December
• Proprietary affairs – October, December

Creation affairs:

• Issues of specific research – February, March, April, September
• Internal fund of the student projects (IFSP) – preparati on of the AS SC – March, May, June, December
• Rector's decision – System of incentives to improve R&D performance and quality – September
• Rector's nomination of the BUT Scientific Board members – April, May

Pedagogic affairs:

• Student enquiry to choose the best BUT teacher – May, June, September

Other important BUT AS documents and discussions:

• Amendment to the Strategic Plan of BUT CEITEC for 2014 – January, February, March
• Amendment to the Strategic Plan of BUT CSA for 2014 – March, April, May
• Amendment to the Strategic Plan of BUT IFE for 2014 – April, May
• BUT 2013 Annual Report – April, May
• BUT 2013 Annual Management Report – April, May
• Admissions fees for the academic year 2014/2015 – May, June
• Amendment to the BUT Strategic Plan for 2015 – June, September, October
• Latest information by the chair of the BUT AS Ing. arch. J. Kratochvíl about the events at the Faculty of Architecture – September
• Latest information about the events at the Faculty of Architecture – October
• Nomination of the new UC for the term of 2015 to 2017 (letter by the UC chair) – September, October, December
• Nomination of BUT AS representatives in the BUT working committees and panels – December

CONCLUSION

Brno University has again reaffirmed its strong position in research as well as the high standard of the degree programmes it offers, thus proving that it is a research technical university responding promptly to the needs of the Czech Republic not only in technical subjects or architecture but also in fine arts.

As described by the preceding chapters of this annual report, research and development have been and will continue to be a part of university equivalent to its educational activities.

The ever increasing quality of Master's degree courses and Master's theses help the university maintain and improve its good reputation. While the university places emphasis on a good theoretical background of its graduates it also makes every effort to equip them with practical skills. Brno

University of Technology has an elaborate system to educate future scientists and researchers in doctoral programmes and the high number of doctoral students reached in 2014 is a considerable potential for research.

The annual report lists a number of projects implemented in cooperation with industrial partners and international universities and institutions. Experts from BUT are increasingly often asked by the public administration bodies to work on difficult tasks. This all gives BUT as a higher-education institution more credit making it an excellent and reliable partner in a variety of professional and social areas in the South Moravian Region and in the whole Czech Republic.

Even with the study at BUT being difficult, the university has been successful in maintaining the number of students, for whom engineering is still attractive. In addition to the form of the degree programmes themselves, which are tailored to meet the wishes and needs of not only the students but also of the labour market, it is no doubt also other student activities and opportunities to participate in conferences that contribute to this. BUT will try to stay on this track also in the years to come.

The strategic plan for research, development, innovations, artistic and other creative activities and its amendments along with the Institutional Plan (IP) projects are traditionally perceived as part of BUT strategic management. All the information of this annual report substantiates these aims and objectives being met and evaluated on a continual basis.

Concerning the IP fulfilment in 2014, it may be concluded that, through partial tasks, its main objectives have been met. The funding resources have been used to develop the areas of key importance for the whole university. We have complied with the requirement of internal competition, for which 11% of the total subsidy have been allocated.

BRNO UNIVERSITY OF TECHNOLOGY

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