ANNUAL REPORT

ON THE ACTIVITIES OF BRNO UNIVERSITY OF TECHNOLOGY IN 2021

BRNO UNIVERSITY OF TECHNOLOGY

Annual Report on the Activities of the Brno University of Technology in 2021

The annual report on the activities of the Brno University of Technology in 2021 is submitted in accordance with Act No. 111/1998 Coll., On Higher Education Institutions. It was developed according to the framework curriculum on the activities of the university in 2021, issued by the Ministry of Education, Youth and Sports.
The document is divided into a textual and a tabular part, which has a fixed structure according to the framework outline. On the contrary, according to the instructions of the Ministry of Education, Youth and Sports, it is entirely the responsibility of the university and presents information beyond the required curriculum.

The annual activity report provides data and significant results of all activities related to the operation of BUT in the framework of Czech and international higher education and offers the general public an overview of important scientific research activities.

The annual report was approved by the BUT Academic Senate on May 10, 2022.

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BRNO UNIVERSITY OF TECHNOLOGY

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ON THE ACTIVITIES OF BRNO UNIVERSITY OF TECHNOLOGY IN 2021


VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ
Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice
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FAKULTA
STAVEBNÍ
AIRBRUSH


VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ
VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ
FAKULTA INFORMAČNÍCH TECHNOLOGIÍ
FAKULTA ELEKTROTECHNIKY A KOMUNIKAČNÍCH TECHNOLOGIÍ
KRAJSKÉ ŘEDITELSTVÍ POLICIE JIHOMORAVSKÉHO KRAJE
POLICIE ČR

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1.1 Rector's introductory word

Dear readers,

This year, for the first time, I have the honour of writing the introductory word of the annual report on the activities of our university for the calendar year 2021. After the COVID grip of the year 2020, we all hoped that the following year would bring relief. Unfortunately, its course, especially in the beginning, was also marked by a still unrelenting pandemic, accompanied by zigzagging between COVID-19 mutations. From the very beginning, teaching in the summer semester was accompanied by the state of emergency, which limited direct contact with our students. We have learned to find solutions, to optimise, and, importantly, to turn constraints into opportunities in many ways.

It is necessary to appreciate the commitment and creativity of our academic staff, who prepared online forms of teaching and often fundamentally changed their teaching preparations. And really, unique teaching patterns have been created in many cases. The situation has made us think about what is truly distance learning and remind ourselves that our university may have forgotten real know-how in this area, when it was one of 40 distance learning centres in Central and Eastern Europe two decades ago.

We organised the vaccinations of our employees so that we could protect them and return to normal life as soon as possible. It is necessary to appreciate all those who were on the frontline in protecting our health at this difficult time– both our academic staff while teaching and those in the back-office. This is especially true for our dormitories and canteens, where epidemic risks have been particularly concentrated. And so we can proudly say that, despite the difficult conditions, we have ensured the full operation of the school through the joint efforts of our academic, research, administrative, and other staff. Undoubtedly, it was a release when we were able to resume full-time teaching in the winter semester and return to a relatively normal state in teaching. We even managed to keep it in full-time form throughout the semester.

The pandemic has taken away our ability to travel and has significantly affected our goals in the field of internationalisation, not only in mobility, organisation and participation in conferences, but also in the development of joint study programmes. However, we have learned to use electronic communication tools more effectively, and today many of us can no longer imagine that we do not have "Teams". We certainly did not slow down and resign, despite the restrictions, and we are grateful to all our people for that. In the field of research, we have successfully submitted and won research and other projects, and we have implemented contract research and cooperation with industry, where we are among the best in the Czech Republic.

The second half of the year was then marked by academic elections, which were to bring changes in the management of a number of faculties and the university. However, we did not relax even in anticipation of these changes. We have begun to actively prepare for the major challenges for the coming period in research, which provide an opportunity to strengthen our excellence, renew research infrastructures, but also in education, to develop our preparedness in open and flexible learning methods, and to contribute to new societal needs. We have started preparations for two operational programmes, the Jan Amos Comenius Operational Programme and the National Renewal Programme.

We are convinced once again that the most valuable thing we have is our people, their will and creativity, which is, and always will be, the source of our wealth. First of all, I would like to thank all our academic, research, administrative and other staff for their commitment and contribution to the development of our university. I want to thank our students and their representation for their participation, understanding, commitment and willingness to participate in the solutions we had to find. I would like to thank the previous management of the university, its Rector prof. RNDr. Ing. Petr Štěpánek, CSc., Dr. h.c., for the management of the university in the entire previous election period and its implementation through the difficult times at its end. Thanks are due to the deans who retired after the elections and I want to wish all new deans and all executives, at all levels, that we work together to fulfil our visions, because without the enthusiasm, commitment and efforts of our people and leadership, even the best visions will remain just empty wishes. I would also like to thank all those who have given me and the new team of vice-rectors the confidence to lead the university in the coming period and to promise that we will do everything we can to earn that trust. Thank you.

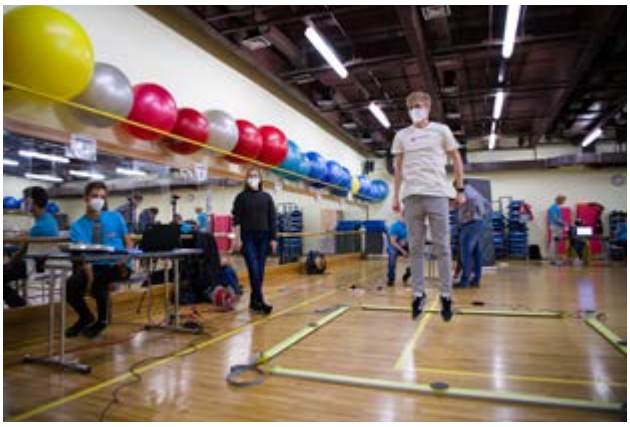
Assoc. prof. Ing. Ladislav Janíček, Ph.D., MBA, LL.M.
Rector BUT

1.2 Significant events at BUT in 2021

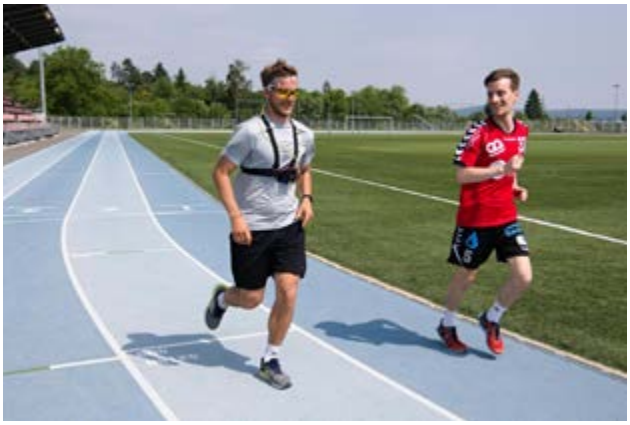
Events and social occasions

▲ On October 26, 2021, the BUT Academic Senate elected a candidate for the position **of Rector for the term of office from February 2022** to January 2026. The winner of the election was Assoc. prof. Ing. Ladislav Janíček, Ph.D., MBA, LL.M., who works at the FME Aviation Institute and who also held the position of University Quaestor. In a secret ballot, 24 of the 27 senators voted for him. His challenger was Dean of FIT Pavel Zemčík.

▲ Exhibits from BUT were on display in the Czech pavilion at the **Expo 2020 world exhibition**. Experts from FME sent a robot to Dubai to demonstrate 3D printing from an innovative biopolymer, 3D printed blocks for a green wall, and a project to introduce an easy way to remove plastics from seas and oceans. There was also a robotic rescuer from FIT who can find a man in a landslide or under an avalanche. After a year's delay, Expo 2020 began in the United Arab Emirates on October 1, 2021 and will run until March 31, 2022.



▲ After a year, the Brno **Night of Scientists** finally welcomed visitors in person at last. BUT's open laboratories welcomed visitors on September 24, and the theme for 2021 was time in all its forms. The fans of science could look, for example, at the Museum of Computer Science at FIT, where fifty personal computers from a more or less distant past could be seen. The FFA gaming media studio, which participated in the event for the first time, has opened the curtains on student computer and board games and their development over time. The reaction times of the athletes was again measured by technicians from the BUT Sports Activities Centre.



▲ CESA's top sports venues were used by **Sports Technology students from the UAS Technikum Wien** in June. As part of their annual projects, they measured the technical aspects of the technologies they themselves had designed. They subsequently passed on their know-how to BUT staff and students of the Sports Technology programme, which is taught at FEEC and CESA.

For the first time in its history, the Czech Republic hosted the **Interspeech international conference**, which took place in Brno from August 30 to September 3, 2021. Hundreds of world experts arrived in the Moravian metropolis – speakers, who specialise in audio processing. More than a thousand experts joined the event online. The specialists presented news from the field, such as how to start using machine learning with a minimum of input data, and whether COVID-19 can be detected from a cough. The event was organised by FIT scientists.

Despite the unfavourable epidemiological situation, FCH organised the student conference **Chemistry is Life**, which took place on November 25 and 26, 2021 in an online format. The conference also included a student creative activity competition, with the best student contributions in each section receiving valuable prizes. The competition is intended for students of chemistry and related fields of bachelor's, master's and doctoral study programmes, as well as for high school students.

▲ The Brno Gallery of Architecture featured **private views of Manhattan**. Despite the iconic nature of the New York City Manhattan skyline, there are only four places where the public can experience this view, at an additional cost. All other views from above are the private privilege of the owners of the most luxurious apartments. From October to November, the Hungarian visual artist Andi Schmied offered an insight into this elite world at the Private Views exhibition in the Brno Gallery of Architecture, run by the FA.

The help of structural engineers from FCE and the offer of support to students and employees from the affected municipalities – this is only a fragment of the activities through which BUT gave a helping hand to people who were **affected by the tornado in southern Moravia** in the summer of 2021. The FME Aviation Institute also participated, helping firefighters take pictures of the whole area; the Halls of Residence and canteens offered accommodation, and forensic experts from the BUT Institute of Forensic Engineering spent two weeks counting the damage to municipal property for the South Moravian Region. Huge thanks go to all those who went either with BUT or independently to give assistance to the affected communities.

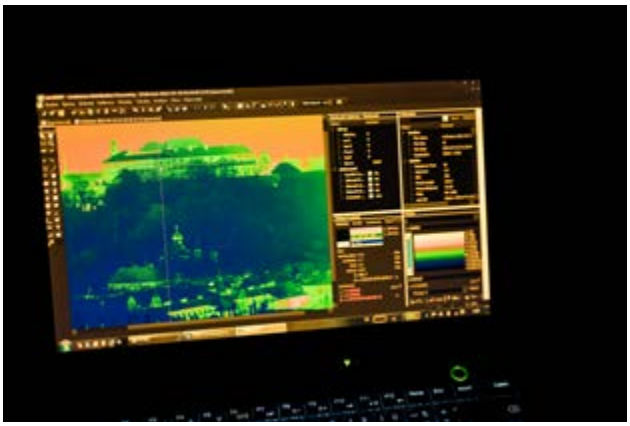
▲ An architectural **model of the future form of the new Trnitá district** was created at FFA. It features hundreds of buildings, over two thousand trees, train and tram lines and the Svratka River as a significant landscape element of the area – all at a scale of 1:500. The 12 square metre model of the new Trnitá district presents an area of Brno two kilometres long and one and a half kilometres wide. The model for the expert jury of the international competition for the design of the new main railway station was prepared by the Office of the Architect of the City of Brno in cooperation with the 3D studio of FFA.

In September 2021, an **extensive reconstruction and modernisation**, costing 500 million crowns was started at FME. The investment project is possible thanks to a subsidy from the Ministry of Education, Youth and Sports from the Development and Renewal of the Material and Technical Base of Public Universities programme. Over the next three years, the university will gradually modernise the interiors of most of the buildings on the campus. The students themselves were involved in the preparation of the project so that the result would suit their needs. The first renovated premises should be ready to serve students and teachers by the autumn of 2022.

▲ On Thursday, June 3, 2021, BUT hosted the all-day **161st Plenum of the Czech Rectors' Conference** at the Hotel Continental, at which the CRC Presidium elections for the term of office from August 1, 2021 to July 31, 2023 took place. The meeting was attended by almost fifty top representatives of domestic public and private universities, and also by the Chairman of the Grant Agency of the Czech Republic

Jaroslav Koča and the Deputy Minister of Education for Higher Education Pavel Doleček. The accompanying programme included the opportunity to tour the FabLab Experience truck.

Not one, but **two new formula monoblocks** were presented on Saturday, June 26, by students of the Brno University of Technology. The young designers from the TU Brno Racing team are not afraid of challenges and, in addition to their tenth anniversary model with the Dragon X internal combustion engine, this year for the first time they also raced with their first electric formula car. They called it Dragon e1 and it appeared on the track for the first time on the circuit in Most. The TU Brno Racing team consists of students from several BUT faculties and in the last season it placed 9th in the world rankings.



▲ On the night of Saturday, April 10, 2021, **public lighting throughout Brno was turned off for several hours**. The aim of the event was to find out how much Brno suffers from light smog. In addition to aerial photography, Petr Baxant from FEEC also took part in the observation. The first results showed that while public lighting creates light pollution, the regulation of lighting in private buildings and premises could have a much greater result.

In 2021, the FEEC Institute of Radio Electronics participated in the construction of the BDSAT nano-satellite and in the development of a compact two-way amplifier for remotely piloted aircraft for the European Space Agency. Furthermore, this year, in cooperation with the FME Institute of Aviation, we managed to accredit the follow-up master's degree programme in English, **Space Applications**, which will be offered to applicants for the first time in 2022. The department thus continues to strengthen its focus on space research in cooperation with major European players in the space industry.

How to protect industrial heritage and what can be done to revitalise it and make it accessible to the public has been the subject of an international collaboration called **Re-FACT**, which, for more than a decade, has brought together several like-minded professors from European architecture faculties. Helena Zemánková from FA, who hosted this year's workshop on Schindler's Ark in October, is among them.

▲ After two years of preparations and construction, BUT has opened a **new workout playground** in the Pod Palackého vrchem sports complex. The ceremonial opening of the operation took place on September 28, 2021. With the financial support of the city, the university built a modern outdoor gym on the unused courts for classes and for leisure activities for students, employees and the sporting public. The course, with an area of almost 1,000 square metres, has several specialised sections, each offering a different form of fitness training or functional training. One part is specially adapted for the disabled.

▲ The exhibition 'Philosopher of Structures: **Architect and Engineer Jaroslav J. Polívka**' is a research exhibition by Ladislav Jackson of FFA, which acquainted visitors with the extensive work of the architect Jaroslav Josef Polívka, especially with his footprints in Brno and his rich and fruitful life and work in the United States after 1939. The event also included a number of accompanying guided tours, architectural excursions, lectures and art workshops for children. The exhibition took place in the FFA Gallery from September 30 to November 3, 2021.

Based on the established cooperation between the BUT Institute of Forensic Engineering and the American **University of Colorado Boulder** on the topic of published research on the movement of unattached objects in a vehicle and their impact on the crew, through the student mobility programme, doctoral student Jaroslav Hrubý was able to have a long-term trip in 2021. The stay resulted in quality publications and suggestions for further joint research. With

regard to this successful internship, further cooperation was agreed in the form of a junior researcher's trip for 2022.

▲ Eric D. Glowacki's research moved to the CEITEC BUT research centre. This ERC grant holder is involved in the groundbreaking research and development of **wireless nerve stimulation** in the human body. Members of his research group will work on the production of ultra-thin and wireless stimulators powered from the outside of the body. The Polish scientist moved to Brno from Linköping, Sweden.

▲ The first international summer school called **Brno post-industrial** took place at FCE in August. It dealt with the topic of urban engineering. Students from Germany, Poland, Croatia, Spain and the Czech Republic attended the summer school with the theme of Brno brownfields. The content was not only professional lectures, excursions and practical measurements in the field, but also teamwork and a social programme. As part of the international summer school, students created a conceptual design for the sustainable renovation of the selected Brno Jaselská kasárna brownfield.

A new laboratory with what is known as **quantum communication infrastructure** has been available to FEEC experts since September. The lab will allow scientists to work on next-generation computer networks that will be protected from quantum computer attacks, to which the vast majority of current networks, including the Internet, are vulnerable. The results of measurements and experience with the deployment of quantum networks will be used in building the National Quantum Network under the auspices of the CyberSecurity Hub, of which BUT is a founding member.

▲ A new BUT spin-off company emerged from the FME in June 2021. It's called 3Deposition, and the 3D in its name isn't coincidental: the company wants to focus on technologies for large-scale printing, including robotic 3D printing from concrete. The young company's first order was the **3D printing of concrete obstacles for a parkour playground**, where athletes have been training in Prague 11 since September. 3Deposition also contributed to the World Expo in Dubai, where it collaborated on a demonstration of robotic 3D printing.

Sixty participants from twelve mechanical engineering faculties from the Czech Republic and Slovakia met at the traditional SESIA meeting. The event took place in September 2021, after a one-year delay due to a coronavirus pandemic, and was hosted by FME. **Deans, Vice-Deans and secretaries of the faculties of mechanical engineering from Pilsen to Košice** attended the event. In the premises of the Hotel Zámek Valeč, for two days the participants discussed the teaching of technical fields, research and other topics that directly concern the faculties of mechanical engineering. At the end of the event, the Dean of the Faculty of Mechanical Engineering, Jaroslav Katolický, handed over the symbolic SESIA standard to the next organiser, the Faculty of Mechanical Engineering of the Technical University in Košice, which will host the meeting in 2022.

The Chemistry and Life conference took place at the FCH in September. It also contained an Industrial Forum, which provides a platform for the transfer of experience and discussion on the possibilities of cooperation between universities and industrial partners in the field of science and research, and in the field of student education with regard to reflection on practice and labour market requirements. The conference topics included organic and printed electronics as well as photonics, photocatalytically active surfaces and biocolloids.

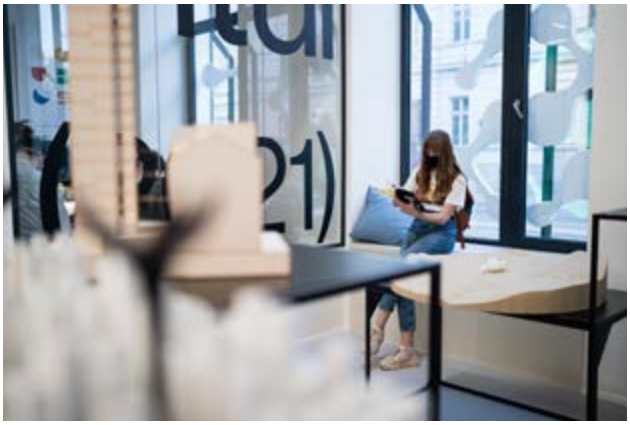
BUT electrical engineers studied the **effectiveness of speleotherapy** and natural phenomena in the Amatérská Cave. Staying underground is not only a popular tourist experience, but for mild asthmatics it can be a treatment that will improve their quality of life. To ensure that neither

the effectiveness of the treatment nor the natural beauty of the environment suffers, FEEC researchers dealt with measurements directly in the caves. They are also newly cooperating with naturalists from Masaryk University and are finding out how farming and tourism near the Amatérská Cave is reflected, for example, in the water quality of the Punkva river.

▲ The charity fundraiser **Koláč pro hospic (A pie for the hospice)**, which BUT joined for the first time this year, raised CZK 66,423 on Wednesday, October 6, 2021. With a contribution of CZK 50 and more, students and employees of the Brno University of Technology were able to support palliative care in the Home Hospice of St. Lucie in Brno; in return they received a sweet cake. The event is traditionally organised by the Diocesan Charity of Brno. The stands could be found at the public final tram stops in the Technology Park, at the Picnic Box opposite FCE, and in front of FEEC and FBM; there was also a mobile unit that visited not only the Rector's Office but also other faculties and parts of the university.

▲ In October, representatives of the first six signatories put their signatures to a memorandum of cooperation, covering joint activities in the development of sustainable energy, transport and environmental protection, including the creation of the **European Institute for the Use of Hydrogen and New Technologies**, based in Brno. In addition to the City of Brno, there are other signatories to the BUT Memorandum, such as Teplárny Brno, Dopravní podnik města Brna, SAKO Brno and Symbios Funding & Consulting GmbH.

▲ The Christmas tree at FBM brought the Association of Foster Families significant joy. This year, the faculty's staff and students donated a record number of **Christmas presents to children from foster families** – more than 180. The ceremonial handing over of the gifts took place on December 13, 2021. More than 12 years of cooperation between the faculty and the association arose due to the fact that the chairman of this association is a graduate of the FBM. Together, the students and staff have helped to provide presents to more than a thousand children, especially from South Moravia, during the history of the event.



▲ **The Brno creative hub KUMST** also opened to the public in September. The organisers have prepared meetings with creative professionals, exhibitions, workshops, concerts and other events, not only in the building of the creative hub, but also on Údolní Street. The KUMST Creative Centre is located in the former FFA building at Údolní 19. The operation of the new hub began with the KUMST Design Market sales event.

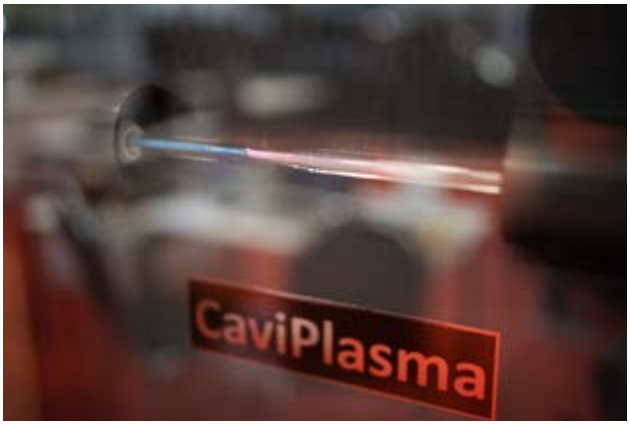
The FBM team is helping Red Hat improve all of its affiliates around the world. Years ago, Ondřej Žižlavský and his team set out to develop a methodology that would help small companies and giants to measure the success of innovations. Their **Innovation Scorecard** now has a Czech certification, a book and a successful cooperation with Red Hat, which employs thousands of people around the world.

▲ The Institute of Microelectronics, FEEC, has opened a new research laboratory for students who like to design electronic devices, or who need instruments and technological equipment for their scientific research work, for example in the framework of final theses. The **micropasting plant**, as the laboratory is called, is available to students 24/7 thanks to access via student card and the set control supervision mode. Students have all the instrumentation and technological equipment they need for their creative work.

Achievements and awards

▲ In June 2021, at the **Brno Ph.D. Talent** competition, eight doctoral students from the Brno University of Technology were awarded, receiving a scholarship from the city of Brno so that they could devote themselves exclusively to their research. Five of them work at CEITEC BUT (Adelia Kashimbetova, Lucie Kotásková, Lucie Pejchalová, Michela Sanna and Ondřej Wojewoda). Roman Andriushchenko and Jiří Pavela from FIT and Iveta Lolová from FEEC also succeeded in the South Moravian Centre for International Mobility programme. All the young scientists received a symbolic cheque from the hands of the mayor of Brno.

Five BUT students and graduates won the **Josef Hlávka Award** this year. On Tuesday, November 16, 2021, the Josef, Marie and Zdeňka Hlávková Endowment Foundation awarded the Josef Hlávka Award, which is intended for talented students from bachelor's, master's or doctoral studies up to the age of 33. The award, accompanied by 25 thousand crowns financial support, is regularly presented on the eve of the anniversary of the Velvet Revolution. This year, the jury was impressed by the works of Andreas Gejdošík (FFA), Vojtěch Havlena (FIT), Lucie Ivanová (FCH), Robin Kolařík (FEEC) and Zita Salajková (CEITEC BUT).



▲ New technology for water purification using cavitation and low-temperature plasma won the **Gold Medal at the International Engineering Fair** 2021. The CaviPlasma device can remove chemical residues from water and also kill pathogenic microorganisms. The invention from FME was created in collaboration with colleagues from Masaryk University and the Academy of Sciences of the Czech Republic. According to experts, it has the potential to handle large volumes of water and find applications in industry. It was successful in the category of processing technology at International Engineering Fair. Another exhibit BUT collaborated on, and which was entered into the competition by the partner company Slovácké strojírny, also received an award.

In the 12th year of the competition for the **best diploma theses in the field of IT**, which involved almost 1,300 students from 13 Czech and Slovak universities, Patrik Goldschmidt from FIT, who also won the Public Award, took second place. In his diploma, he focused on faster detection of frequent and very dangerous cyber attacks such as DoS and DDoS. The thesis impressed the jury by showing how it comprehensively uses a number of theoretical principles, which are already being applied in practice.

Architects from the FA designed a **new look for the CZ*ECO Nelson polar station**. The building, which was acquired four years ago by a private Czech Antarctic Endowment Fund, is intended to serve scientists as a warehouse, laboratory and small hostel. The station, formerly known as Eco-Nelson, is located on Nelson Island in the South Shetland Archipelago and is conveniently located, especially for polar explorers who continue on to J. G. Mendel Station.

▲ Students and teachers of FFA BUT scored in the competition **The Most Beautiful Czech Books**. The awards were announced and ceremoniously handed over in September 2021 at the Centre for Architecture and Urban Planning in Prague (CAMP). In the competition for the best book design, the expert jury selected from a total of 323 registered books, 31 of which were nominated. Among the winners were graphic artists Adéla Svobodová and Tereza Hejmová, the VUTIUM Publishing book Stories of Paint by Milan Houser, graphic artists Tereza Bierská and Nela Klímová, and other personalities associated with FFA.

In January, Brno councillors awarded the traditional **Brno City Awards**. Jaroslav Cihlář from FME, who also works at the CEITEC Science Centre and at FCH, was awarded in the category of technical sciences, and in the field of architecture and urbanism, FA graduate Professor Petr Pelčák received the award. The councillors awarded 15 proposals of the total of 61 submitted.

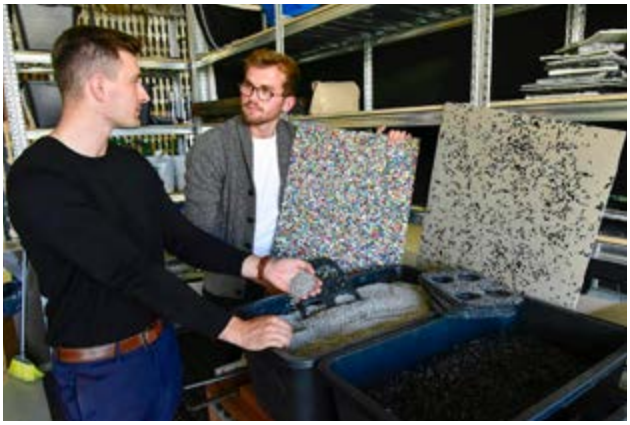
Experts from the Brno University of Technology have successfully sold a license for a new technology that will enable a more reliable operation of sewer networks and **prevent clogging of sewers**. The new technology created by the team from FCE and FME is protected by a European patent and the license for its use has now been purchased by the domestic company PRESSKAN. The company has big plans for the new technology: it wants to use it not only in the Czech Republic, but also in Denmark, Germany and eight other European countries.

The ArnetMiner AI 2000 Most Influential Scholars ranking has confirmed that FIT researchers are among the world's leaders in speech recognition and have ranked BUT among the **world's top five institutions** in this field – alongside Google, Facebook, IBM and Carnegie Mellon University.

Doctoral student Kateřina Žmolíková from the "rhetorical" research group BUT Speech@FIT also won a student prize awarded by Amazon for first place in the category of objective assessment of comprehensibility in the international Clarity Challenge.

For the fifth time in a row, FME won the **School Recommended by Employers** competition. Representatives of companies from all over the Czech Republic evaluated university faculties in terms of their contribution to the labour market and the qualifications of graduates. The FME result also contributed to BUT being the highest evaluated among Czech universities.

▲ FEEC student Veronika Kamenská is among the thirty young talents in the Forbes 30 under 30 magazine. Veronika is the founder of the **Nepanikař mobile application**, which provides quick psychological help for free. In January, she also received the Ministry of Education, Youth and Sports Award for Extraordinary Student Deeds for her work. The award was given to students or university graduates who actively helped during the COVID-19 pandemic through volunteering and other activities. The application has already helped save dozens of lives.



▲ On Friday, November 26, 2021, an expert jury composed of representatives of BUT and JIC selected the winner of the **BUT Student Entrepreneurship Award** from nine finalists. The absolute winner was a team of students from the FCE Institute of Architecture called Plastic Guys. They recycle plastic waste,

from which they create design boards usable not only for shelters in the Czech forests, but also in interior design.

Štěpán Macek from FCE won the **Ministry of Education, Youth and Sports Award for Outstanding Students** for 2021. He attracted attention with his final thesis Restoration of the Municipal Spa in Malé Svatoňovice. During the evaluation, the jury was impressed by the fact that the student of Civil Engineering used waste plastics as a secondary raw material in construction and thus connected architecture with renewable materials.

▲ Franziska Schenk, a FA student, won the **Urban Design Award 2021** international competition in March with her Green Clusters project. A record 60 projects entered the 25th year of the competition for the best urban project for architecture students from eight university cities in Europe. Of the fifteen that advanced to the second round, the jury finally selected six, to whom it virtually presented the awards when the winners were announced online on March 24.

▲ Of the 43 registered students in the **Athlete of the Year at BUT** 2021 poll, those who succeeded best in league or academic competitions last year made it into the top ten. First place went to sports climber Rishat Khaibullin from FEEC, who represented his native Kazakhstan at the Tokyo Olympics, where he achieved 11th place. Second place went to the ice hockey player Ema Záňová from FBM and the third to the bodybuilding and fitness athlete Nikoleta Hricová from FCH.

▲ Katrin Bučková, a successful graduate of the double degree programme in Industrial Engineering from FME, was a winner at **the Werner von Siemens Awards** in March. The jury was impressed by her diploma thesis entitled 'Advanced technology for the production of joint implants using the EBM method'. Out of a total number of 263 diploma theses, the recent graduate came 2nd. The thesis is also an appreciation of BUT's international cooperation with ENSAM ParisTech in France, and the teamwork of the staff of the Institute of Mechanical Engineering, with whom the diploma thesis author has worked for a long time.

▲ This year, Marek Jan Štěpán from the FA received the Construction of the Year 2021 award for his design of a villa in Nový Jičín. His recently completed church in the Lesná district of Brno then scored in the **IDA Design Awards** competition in the interior category. The public could also encounter his work as part of the reopening of the exposition of the Museum of Applied Arts in Brno, which Štěpán supplemented with the interactive exhibit Cloud.

Among the five awarded finalists of the **Jindřich Chalupecký Award** 2021 were the teachers Jakub Jansa and Valentýna Janů from FFA. The international jury selected four artists and one multi-member group for the finals. In addition to Robert Gabris, Anna Ročňová and Björnson's artistic non-team, two FFA teachers were among the finalists – Jakub Jansa from the Performance Studio and Valentýn Janů from the BUT FFA Intermedia Studio. The joint exhibition of the winners was opened on December 2, 2021 in the Moravian Gallery in Brno.

▲ The BUT Technically Speaking podcast, which tries to clearly present the scientific and technical topics addressed by researchers at the Brno University of Technology, is the second best marketing project in the public sphere, as well as the winners of the **Golden Semicolon 2021** marketing competition. In addition, BUT scored not only in the Public Sector and Political Communication category, but also in the category Brochure, Catalogue and Leaflet, where the expert jury awarded BUT second place for the Magazine for Applicants at BUT 2021/2022.

The doctoral student Václav Pecina from FCH achieved 3rd place in the **Make our planet great again competition**, organised by the French Embassy in the Czech Republic, for his dissertation on Environmental Contamination in Mining Areas and the Possibilities of Their Phytoremediation. This award aims to reward the research work of Czech students in the field of climate change, the environment and sustainable development. The ceremonial announcement of the winners took place on Thursday, September 30, 2021 at the French Embassy in Prague.

▲ In October, athletes from BUT took part in the **traditional rowing competitions of university eights** and fours on the Svratka River. At the beginning of the programme, the women's coxed fours tested their strength. Charles University in Prague came first on the one-kilometre course, while BUT placed sixth. The men's fours race was dominated by the BUT team, on whose premises the canoeing boathouse of the Centre for Sports Activities, and the entire facilities of the races, were located. Visitors also witnessed the Brno duel between the MUNI and BUT eights. This year, BUT was stronger, beating MUNI by three lengths.

BUT has had an international **HR Award** since February. Of Brno universities, Mendel University and one of the faculties of Masaryk University, together with CEITEC MUNI, have so far received the HR Award. BUT applied for this international evaluation for the entire university at the end of 2019, and, after more than a year of work with its application, it finally succeeded, unconditionally.

The Empathy Award is a joint project of Komerční banka and the National Gallery in Prague. The aim of the open competition is to support art projects with a social dimension. The winning designs of FFA PhD student Romana Drdová and Lenka Záhorková transcend the boundaries of fine arts and creatively produce opportunities for reciprocity and considerate coexistence in society and the environment. Artists working in the Czech art scene were able to apply for the Empathy Award, regardless of age and nationality.

Researchers from the Institute of Technology of Building Materials and Components at FCE have developed new silicate building materials that are characterised by the ability to conduct electric current, thus preventing overvoltage in building structures, and are part of a system to **protect buildings from lightning**. The material can be applied to improve grounding in electrical distribution networks, the traction lines of railways, transmitters, buildings, the Internet and fibre networks with optical fibres.

▲ The first three prizes in the **PhysioNet/CinC Challenge 2021** competition, in three categories, were won by the Scientific Group on Artificial Intelligence and Medical Technologies of the Institute of Instrumentation of the ASCR. The group includes not only Filip Plešinger, a graduate of FME, but also Petr Nejedlý, a graduate of FEEC. The awards were presented to researchers for algorithms for automatic detection of cardiac activity disorders from ECG signals. The research team received the awards at the 48th International Computing in Cardiology Conference, building on the successes of 2014 (Boston, USA), 2015 (Nice, France) and 2017 (Rennes, France). In addition, the Institute of Biomedical Engineering FEEC successfully organised the international conference **Computing in Cardiology** 2021 in September this year.

Five students and two teachers from FBM took part in the international Hackathon competition on 15 and 16 April. This year's theme was Hackoffice 2021: **Sustainable Office and Modern Workplaces of the Future**. A total of 63 students and 26 academic mentors from all over the world took part in the event. Vojtěch Drahokoupil's team finally won the first prize in its run, Katka Prosecká's team had the best presentation in the second run and Petr Kostka's team also had the best article in the first section.

▲ Jan Šrámek from Atelier video and Veronika Vlková from the Atelier of Painting 3 at FFA BUT took first place in the category **Illustrator of the Year** in the Czech Grand Design competition. The jury was fascinated by their illustrative work for the book Apolenka from the Blueprint (Romana Košutková, Gallery of Fine Arts in Hodonín). The Czech Grand Design is elected by members of the Academy of Design of the Czech Republic, who assess works in the field of fashion, jewellery, photography, illustration, product or graphic design. The winners were announced on April 21, 2021.

This year, the staff of IFE BUT issued a **new expert standard for the valuation of motor vehicles**. It is based on the Property Valuation Act and sets out procedures both for the valuation of road and special vehicles, and for determining the amount of property damage caused by them. For the purposes of these assessments, the standard also sets out the minimum recommended content of the expert's report in order to ensure the completeness and reviewability of the performed assessments, especially in the performance of the expert's work.

The third year of the **Atlas Copco Services Award** competition, which recognises the most interesting economic diploma theses created at domestic universities, also proved a success for Barbora Tichá from FBM. Her diploma thesis was one of the best six selected. Even though she did not reach the podium, she received recognition as one of the top six. She impressed the jury with her work entitled Modelling Bankruptcy Prediction in the Manufacturing Industry.

For fourteen years, an international team of researchers from the University of Hawaii and the FME have been monitoring total solar eclipses around the world. They summarised their latest findings in 2021 in an article for the prestigious Astrophysical Journal Letters, and NASA also noted the article on its website. Thanks to their measurements, experts have identified the sources of different solar wind currents in the solar corona. And that's not their only success. **The solar corona image** by Andreas Möller and Miloslav Druckmüller was chosen as NASA's astronomical image of the day on January 7. In April, Druckmüller and astrophotographer Petr Horálek reconstructed a picture of what is known as the Einstein solar eclipse from 1919, during which the general theory of relativity was confirmed. In February 2021, the **documentary Helios** had its television premiere, introducing viewers to the life work of the mathematician Miloslav Druckmüller, which showed science a new perspective on the Sun.

The Technology Agency of the Czech Republic presented individual winners in the categories of the TA CR Awards. Among them are ideas associated with technology in Brno. In the Partnership category, the jury was attracted by the project Monitoring and Digital Forensic Analysis of the IoT Environment, in which FIT cooperates with Flowmon Networks. Another successful project, this time in the Business category, is the development of an atomic source for applications in electron microscopy, in which Thermo Fisher Scientific participates in addition to CEITEC BUT. This project, focused on electron microscopy, was the main winner of the **Czech Idea** Award in December.

▲ Another final nomination, for the candidate recruitment campaign, resulted in an award, this time second place in the Social Media category of the **Fénix content marketing** campaign. First place went to Aleš's South Bohemian Gallery; Johnson & Johnson, Škoda Auto, DM drogerie and Komerční banka all finished behind BUT. The announcement of the winners of the 8th annual competition took place on Sunday, June 28, 2021 in the Rudolfinum in Prague.

The main prize for **young Ukrainian artists**, MUHi 2021, was won by Pavel Nikitin from the Sculpture Studio 1 at FFA BUT. The International Expert Commission evaluated the applications of Ukrainian artists. Based on the results of the evaluation, 10 finalists for the competition were selected. Their works were presented at the exhibition, which was open from November 11 to December 5, 2021 at the M17 Centre for Contemporary Art. The winner of the competition,

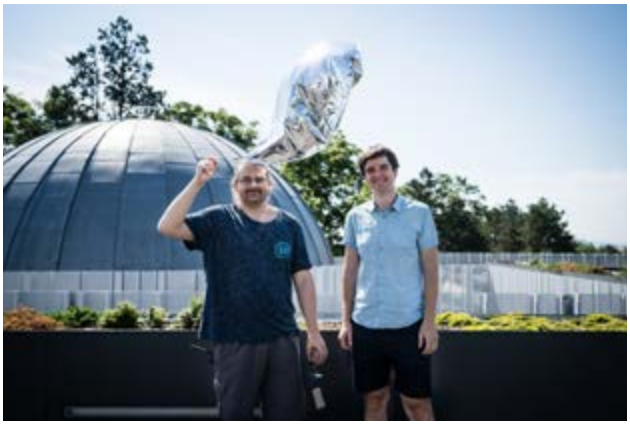
Pavel Nikitin, received a financial reward and the opportunity to present his own project in the gallery premises of the Shcherbenko Art Centre.

▲ Tomáš Zbavitel has been deaf since birth and was **the first BUT student with this disability to successfully obtain an engineering degree**, passing the state final exam in the autumn of 2021. Not only he, but also his teachers and interpreters had to overcome obstacles while studying at FME. That is why the Faculty Scientific Board awarded the Czech sign language interpreters Radka Kulichová and Jitka Hořanská from the Alfons Counselling Centre the title of Honorary Engineer.

FCH's know-how has become the basis for a project of a consortium of 17 European companies and institutions that will develop the **ecological packaging of the future** for food and cosmetics. The consortium includes the multinational company Unilever and other excellent EU workplaces. Nafigate, along with its partners, has won a tender from the European Commission under the Horizon 2020 research programme and will implement a next-generation sustainable packaging project called BioSupPack.

▲ **The Czech Architecture Prize 2021** awarded, among other things, a house in Jeseníky, which was designed by FA doctoral student Ondrej Palenčar. His architectural studio Tři.Čtrnáct architects received an award for its sensitive and environmentally friendly design for a building in a rural environment. This category is under the auspices of the Nature Conservation Agency.

Miloš Musil from the Institute of Information Systems FIT is behind a new web application that helps scientists in what is termed ancestral reconstruction. He developed the unique tool in collaboration with scientists from the International Centre for Clinical Research FNUSA and researchers from Loschmidt Laboratories at Masaryk University. There, they use the application to study molecular evolution and **search for ancient proteins that no longer exist today**. These can help, for example, in pharmacology, medicine and biotechnology.



▲ Jan Král and Martin Pospíšil, doctoral students from the FEEC Institute of Radio Electronics, took part in the **PicoBalloon Challenge 2021** competition organised by the Observatory and Planetarium in Brno in June. The starting weight of the probe they developed was only 10.5 grammes. They installed amateur radio communication systems on a 36 × 17 mm printed circuit board. The signal of this probe was audible from the Black Sea to the USA, i.e. at a distance of over eight thousand kilometres.

Doctoral student Michaela Vojníková from CEITEC BUT became the winner of the national round of the **Falling Walls Lab** international competition. This FCH graduate, whose work focused on Chemistry for Medical Applications, attracted the attention of the expert jury with her presentation on the topic of reconstruction of damaged nervous systems. It uses bioceramic materials to accelerate the regeneration of the peripheral nervous system. The young scientist is studying Advanced Materials and Nanosciences at CEITEC BUT and works in the team of Vojtěch Adam, who deals with smart nanotools. The Czech final of the international competition took place on September 14, 2021 in the National Technical Library in Prague, and Michaela Vojníková then represented the Czech Republic in the European final, which took place on November 7 in Berlin.

▲ The publication **'European Adolf Loos. Not only the Brno footprints'** was awarded second place in the Gloria musaealis national competition of museums. The book was published at the end of 2020 by the Brno City Museum and the FFA on the occasion of the 150th anniversary of Adolf Loose's birth. It was edited by Jindřich Chatrný and Dagmar Černoušková from the Brno City Museum and Jana Kořínková from FFA. The awards ceremony took place on June 17, 2021 in the Municipal House in Prague.

Student Vojtěch Procházka from FBM came 3rd in the competition of diploma theses on the topic of tax, which was announced by the **Chamber of Tax Advisers of the Czech Republic**. 13 students from 8 universities applied for this 4th edition of the annual competition. The expert committee evaluated individual works on the basis of a number of criteria– inventiveness and argumentative persuasiveness, compliance with the profession of tax advisor, usability in practice and the degree of compliance with the topic.

On December 10, Vladimír Šlapeta from FA received the **Bene Merentibus** medal for spreading awareness of Polish architecture at the annual meeting of the Association of Polish Architects in Warsaw. In the past, this prestigious award has been given to film director Andrzej Wajda and composer Andrzej Panderzecki. Architect Šlapeta is the head of the Institute of Theory of Architecture at BUT and also works at the Institute of Theory and History of Architecture at FA CTU.

Four gold and eight silver medals were awarded to technicians from BUT. Informal meeting of golden medalists replaced a festive Academic Assembly in the auditorium, which was not held due to the epidemiological situation. The gold medal for this year was awarded to Eva Gescheidtová (FEEC), Milan Klapetek (LLI), Mária Rezňáková (FBM) and Břetislav Teplý (FCE). Silver medals were presented to the staff by the deans and directors directly at their home faculties and institutions. The following personalities received the second highest award: Hana Alexová (FCH), Daniela Dvorská (RE), Jiří Dvořák (FME), Adam Herout (FIT), Bohumil Pacal (FME), Miloslav Pekař (FCH), Stanislav Škapa (FBM) and Petr Toman (FEEC).

Anniversary

▲ On Thursday, October 14, 2021, the SONO Centre witnessed the celebration of **110 years of teaching chemistry at the Brno University of Technology**. The FCH celebrations were started by a probe into the history of chemical education in Brno and also by the awarding of medals to FCH employees. The representatives of the faculty christened the new publication The Story of Brno Technical Chemistry, from which there was also a small presentation in the form of an author's reading. The tradition of chemistry at BUT dates back to the establishment of the Chemistry Department of the Czech Technical University on November 8, 1911, making it one of the oldest Czech chemical faculties in the Czech Republic.

▲ 10 years ago, on June 6, 2011, the **CEITEC project was officially approved**. Years ago, a group of science enthusiasts had the ambitious dream of establishing a multidisciplinary centre of scientific excellence in Brno, which would connect the best scientific teams from six major Brno universities and research institutions and which would be able to attract foreign scientific talents to Brno. When the project application was submitted, CEITEC was just a large pile of papers containing a sophisticated plan from the local scientific community. Today, CEITEC is not only a major science centre in the region, with modern buildings and laboratories, but is also gradually becoming a respected player at the international level.

▲ **The Institute of Technology of Building Materials and Components** at FCE celebrated its round anniversary of seven decades on Friday, October 1. On the anniversary of the workplace, an almanac with a detailed history of the field and important personalities was created. Former and current employees of the institute and cooperating partners commemorated the seventieth anniversary with a celebration on the premises of the AdMaS Science Centre on Friday, October 1, 2021.

▲ Pavel Švanda, a former FA student, won the **Jan Opletal Award** in memoriam on the occasion of the 40th anniversary of his death. This student was found at the bottom of the Macocha Abyss in 1981. His still unclear death is often associated with the work of the Communist State Security. As part of International Student Day, he was awarded the Jan Opletal Prize, the highest student award for significant contribution to academia, defence of academic rights and freedoms, strengthening student rights and freedoms or for significant contributions in the fight against injustice, for equal treatment and opportunities, and against any discrimination. A former classmate accepted the award on behalf of the late Pavel Švanda's family on Tuesday, November 16, 2021, at the Velvet Students gala evening.

▲ The end of September marked twenty years since the **permanent TUBO station** at the Brno Technical University joined the extensive network of European GPS stations. The abbreviation TUBO refers to the words Technical University of Brno and this station of the Institute of Geodesy at FCE helps surveyors and other experts to measure not only the movements of the Eurasian continent, but also other tectonic plates. Thanks to it, we know that Brno is moving about 2.5 centimetres northeast every year.

The first day of September saw the 65th anniversary of the reorganisation of universities. The government of that time ordered the Ministry of Education to transform the University of Civil Engineering into the Brno University of Technology, consisting of three faculties (the Faculty of Civil Engineering, Faculty of Architecture and Building Construction and Faculty of Energy). Since September 1, 1956, BUT has carried **its current name**.

On June 24, the Brno University of Technology commemorated the 110th anniversary of the **grand opening of the new Czech University of Technology Building** on Veveří Street, today's FCE headquarters. Just three years later, the Sarajevo assassination affected the history of the František Josef Technical University in Brno. At the beginning of the war, many students and staff had to enlist, and a military infirmary was set up in the newly built wooden barracks, where up to a thousand wounded soldiers were treated.

1.3 BUT Science Centres

Central European Institute of Technology (CEITEC) BUT

The year 2021 was marked by the number ten at CEITEC. This research institute celebrated that many years since its foundation. In addition to the celebrations associated with the anniversary, however, we also managed to enrich many employees with new quality researchers from the Czech Republic and abroad, expanding the field of research and winning several awards.

So far, CEITEC BUT has focused mainly on advanced materials and nanotechnologies. However, the management of the science centre has decided to add a new focus on the development of controls, sensors, robotic systems and artificial intelligence. Among other things, the decision supported the acquisition of the RICAIP project, within which the Pod Palackého vrchem testbed of Industry 4.0 was created for approximately CZK 450 million.

CEITEC BUT was successful in attracting the scientist Eric D. Glowacki, who began his research in January 2021 under one of the most prestigious scientific grants awarded by the European Research Council (ERC). His research group Bioelectronic Materials and Systems deals with neurostimulation, i.e. the use of electronic devices in the stimulation of the nervous system.

Within the PROFiBONE project, Lucy Vojtová's research group Advanced Biomaterials focuses on the low-temperature 3D printing of biofunctionalized ceramic bone implants with adjustable mechanical properties. This is an international cooperation between Czech universities (BUT and Charles University), the Icelandic research organisation IceTec and the company SME Genis, also from Iceland.

Petr Neugebauer and his research group Magneto-optical and THz spectroscopy launched the prestigious CSF Expro project dealing with the use of frequency rapid scanning electron spin resonance spectroscopy. The new facility, which will be prepared by a team led by Jaromír Hubálek as part of the Czech-Austrian WaterMon project, should monitor the water quality constantly and without the need to travel to the sample site.

The pioneering technique of microscopic imaging based on the transformation of the geometric phase of light, which is the result of a joint project of the Faculty of Science of Palacký University in Olomouc and scientists from the Radim Chmelík Experimental Biophotonics research group, will facilitate research on the microworld.

New equipment is also helping researchers. It was Radim Chmelík's research group that enriched its laboratories with a new version of the Telight Q-Phase microscope, which works on the basis of quantitative phase imaging. The Thermo Fischer Scientific electron microscope, which combines an electron and ion beam, is now being used by scientists from Miroslav Kolíbal's team. His team also received the Czech Idea 2021 award from the Technology Agency of the Czech Republic (TA CR) for the development of an atomic source for applications in electron microscopy.

PhD students also did well. Among the winners of the Josef Hlávka Award in 2021 is Zita Salajková, who specialises in laser spectroscopy within the research group of Jozef Kaiser and also at the University of Bari Aldo Moro. Five doctoral students from CEITEC BUT received financial support in the Brno Ph.D. Talent competition. Among the awarded students, who received a three-year scholarship for their research, were Adelia Kashimbetova, Ondřej Wojewoda, Michaela Sanna, Lucie Kotásková and Lucie Pejchalová. However, doctoral students also achieved success beyond the borders of Brno, and even beyond the borders of the Czech Republic. With her diploma thesis from FCH BUT, the student Michaela Vojníková, today a doctoral student at CEITEC BUT,

became the winner of the national round of the Falling Walls Lab international competition and advanced to the world finals, which took place in Berlin.

In 2021, we also managed to establish the spin-off company TriCera. It wants to offer armour even in extreme conditions, the development of which is being worked on by Martin Kachlík and Jakub Roleček from the research group Advanced Ceramic Materials by Martin Trunc.

Despite the limitations associated with COVID-19, the first year of the CEITEC Student Talent summer school was organised, thanks to which 11 high school students had the opportunity to spend three days with their research projects directly in the premises of the research centre.

You can find more information about CEITEC at **www.ceitec.cz**.

IT4Innovations

IT4Innovations is a national supercomputer centre, the carrier of excellent research in the field of IT, specifically in the field of supercomputing (so-called High Performance Computing). It is a research centre with strong international ties. Since its founding in 2011, IT4Innovations has been a member of the prestigious pan-European research infrastructure PRACE (Partnership for Advanced Computing in Europe), where it represents the Czech Republic. Since 2016, it has also been involved in the European Technology Platform for HPC (ETP4HPC, European Technology Platform for High-Performance Computing), which aims to define research priorities in the field of supercomputing in Europe.

The Centre of Excellence IT4Innovations project was implemented jointly by five partners in the years 2011 to 2015: University of Mining – Technical University of Ostrava, University of Ostrava, Silesian University in Opava, BUT and the Institute of Geonics of the Academy of Sciences of the Czech Republic. Subsequently, the cooperation of these entities continued in the form of the IT4Innovations excellence in science project from the National Programme of Sustainability II, within which the centre followed up on excellent research in the areas of supercomputing and embedded systems.

The goal of IT4Innovations, which commemorated the tenth anniversary of its existence in 2021, is to carry out excellent research in the field of very demanding calculations and data analysis and to operate the leading national supercomputer infrastructure, to mediate its effective use to increase the competitiveness and innovation of Czech science and industry. IT4Innovations wants to be a leading supercomputer centre that provides professional services and conducts excellent research in the field of very demanding calculations and processing of extensive data for the benefit of science, industry and society as a whole.

The Centre of Excellence project concluded in 2015 and in 2020 it ended the subsequent five-year sustainability period. But this does not mean the end of the activity itself. The Information Technology Research Centre at FIT, which was established within the IT4Innovations project, also runs a number of grant and contract projects at the faculty, and the established cooperation with the Ostrava supercomputer continues within both research and student projects.

More information about IT4Innovations: **www.it4i.cz**.

Centre of New Technologies for Mechanical Engineering (NETME Centre)

Cooperation with the traditional regional industrial base and a number of international collaborations in the field of applied and contract research have long placed the NETME Centre at the forefront of engineering centres in the Czech Republic. NETME Centre operates as a research centre at FME.

In 2021, the cooperation of FME, including NETME, with industrial partners in the field of science and research reached the value of CZK 40.6 million (from non-public sources), of which the centre's contract research amounted to CZK 38.3 million. The research teams of the centre managed to deepen cooperation with long-term partners (e.g. ŠKODA AUTO, ESA, Třinecké železárny, AMAG Rolling, AERO Vodochody), while also establishing new collaborations.

In the area of basic research, in 2021 NETME participated in 12 Czech Science Foundation projects, of which 6 were newly launched. The research teams managed to succeed with another 8 standard and 3 international projects of the CSF, the implementation of which begins in 2022. These projects form a significant share of the basic research of the FME.

In the field of applied research, in 2021 NETME also participated in 40 TA CR projects. NETME teams then participated in activities in a total of five National Competence Centres, two of which they coordinated (MESTEC, NaCCaS) and three in which they were partners (NCK Strojírenství, NCK Energetika and NCK JOBNAC).

Research teams collaborated with companies on 35 projects supported by the Ministry of Industry and Trade. 16 of these projects were launched in 2021. As in previous years, a number of collaborations in the field of contract and collaborative research took place. For example, the media and the public were interested in the presentation of research on aquaponic farms: in order for business to be not only profitable, but also as environmentally friendly as possible, it is necessary to create a delicate balance in the system that suits both fish and plants. NETME employees with the CzechGlobe centre were looking for a solution for the Flenexa company. Great progress has also been made by 3D printing experts, who founded the new university spin-off company 3Deposition and, as their first commission, printed obstacles for a parkour playground, which have been enjoyed by athletes in Prague 11 since September 2021.

In its second year of implementation, the international Interreg ReMaP, which aims to develop new magnesium alloys that will be usable for the production of lightweight parts and biomedical implants, continued to be a success. An important step was the purchase of an atomiser for laboratories at the NETME Centre. In 2021, two other successfully supported projects were added to those financed from the Interreg programme. Both collaborate with an Austrian partner. The aim of the ROTCUT project is to develop theoretical and experimental methods for the analysis of rotary machining, which will provide missing knowledge to industry and research. František Šebek is the principal researcher.

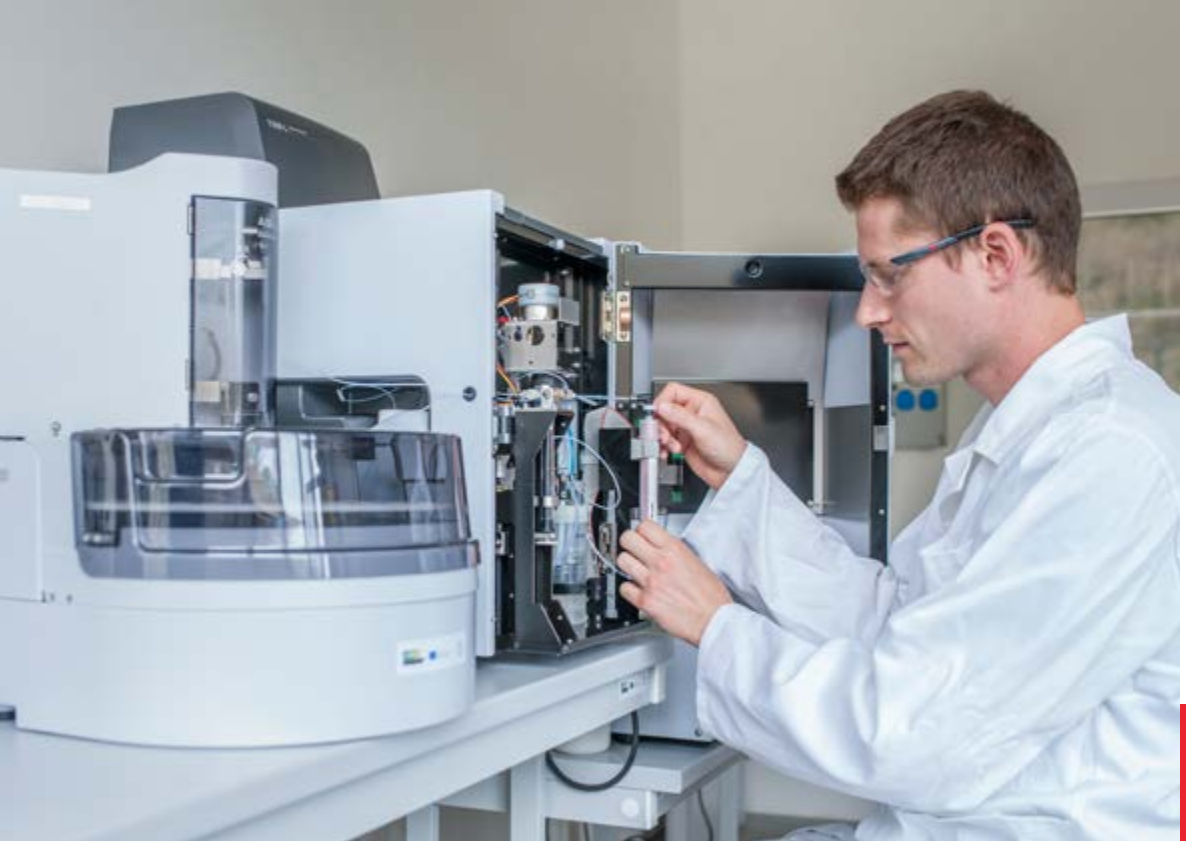
The second supported project, called Testbed Exchange, focuses on creating a functioning network of testbeds (workplaces ready for testing and development of various industrial scenarios) focused on Industry 4.0 technologies and modern automation. Jan Vetiška is the researcher.

In 2021, a total of 32 proposals for international cooperation projects were submitted to the Centre. The projects targeted 13 different international grant programmes. The Thermal Processes research group, with two international projects in collaboration with the University of Leoben, has also had success. From January 2022, a project supported by the EnerDigit Co-Fund called DIWIEN – Digitalisation of water supply infrastructure to optimise the Water-Energy Nexus – will be implemented. The project aims to reduce the energy intensity of the economy and aims to bring new technologies and practices with potential uses. Pavel Rudolf is the researcher.

The Sustainability Process Integration Laboratory (SPIL) has successfully organised a pair of international scientific conferences in hybrid form: the 24th Annual Process Integration for Energy Saving and Pollution Reduction (PRES'21) and the follow-up SPIL (Scientific Conference on Energy, Water, Emissions, Waste in Industry and Cities). The PRES conference received a respectable 513 abstracts from 1,022 authors from 67 countries. Fifty presentations for more than a hundred participants took place directly at the conference venue in Brno, under strict anti-epidemic measures. The SPIL conference hosted 70 participants, with a total of 303 delegates registered for the hybrid event. A total of 106 presentations with 1,380 comments and questions were given on the virtual conference platform.

NETME organised a series of lectures with the well-known Irish scientist Seán McCarthy. The webinars focused on creating a strategy for Horizon Europe international projects. In total, more than 140 listeners took part. The following group workshop motivated the scientists through coaching. In academia, this is an innovative method that was used at the Centre in the preparation of a specific international project for Horizon Europe, where NETME connects four fields: aviation, mechatronics, mechanics and additive technologies, and acts as a coordinator.

Up-to-date information on events in the research centre can be found on the website **www.netme.cz**.



Centre for Advanced Materials, Structures and Technologies (AdMaS)

The AdMaS Research Centre (Advanced Materials, Structures and Technologies), which is part of the Faculty of Civil Engineering at BUT, is a modern centre of science and complex research in the field of construction. It focuses on research, development and applications of advanced building materials, as well as advanced structures and technologies. However, its scope extends beyond the field of construction, for example, in research focused on transport systems, infrastructure of cities and municipalities or the circular economy.

The centre is in its seventh year of full operation on the premises at the Brno address Purkyňova 139. During this period, AdMaS continued to work on scientific research projects acquired in previous periods, and began to implement many new projects (CSF, TA CR, MEYS), including international ones.

In 2021, work on the international project H2020 called OSCaR – Opera Sceneries Circularity and Resource efficiency continued. The project aims to introduce the principles of circular economics in the production, construction and storage of scenery for opera houses and theatres. The key to the solution is to re-evaluate the way sets are used, to revise their design, construction principles and the selection of suitable materials according to the principles of circular economy. In collaboration with the Norwegian University of Science and Technology, a project entitled Curriculum for the Czech-Norwegian Doctoral Programme in the Field of Water Management and Water Engineering was implemented, the aim of which was to prepare a joint doctoral study programme in water management and water construction, with the possibility of obtaining a double degree.

In 2021, the AdMaS Centre dealt with a total of 119 projects in the field of joint research projects, of which 5 were international. One major project was the Centre for Advanced Materials and Efficient Buildings (CAMEB), the successful implementation of which enabled the extension of funding for another two years. In 2021, the preparation of a new consortium for the project of the new NCK II Competence Centre also began.

The AdMaS Centre continued its intensive cooperation with the application sphere, on the one hand in the area of contract research, where it exceeded the sales limit of CZK 52.9 million within 619 implemented contract research contracts. The year 2021 was also marked by the COVID-19 pandemic, yet there was still, albeit to a limited extent, mobility of workers abroad and foreign workers to the centre, which contributed to the creation of new partnerships and the opening of new areas of international collaboration. One of the concrete results is the submission of a project with the Slovenian University of Ljubljana, which focuses on the study of thermal properties and the impact of the reduced life cycle of hybrid eco-nanomaterials under reduced pressure (in a vacuum). It is an innovation in the field of new types of super insulating materials using easily renewable and secondary raw materials.

A major challenge for the AdMaS Centre is the preparation for joining the National Construction Centre 4.0 platform, which aims to exploit the synergies of implementing and optimising digitisation, automation and application of the principles of sustainable environmental behaviour.

More information and news can be found at **www.admas.eu**.

Materials Research Centre (CMV)

The Materials Research Centre is a specialised research centre based at FCH, which specialises in applied research in inorganic materials, advanced organic materials, biomaterials and materials for smart technologies – with emphasis on their chemical side, properties and management. In addition to applied research and cooperation with industry, CMV also has its own basic research, which profiles itself in the areas described above and serves as inspiration for potential applications in the already mentioned areas of research.

The main goal of CMV is to develop cooperation between university research and industry, especially in the form of contract research and jointly implemented projects with their own and grant funding. In this way, an effective transfer of knowledge from laboratories to practice is achieved. In cooperation with the industrial sector, CMV involves FCH students in research tasks that are carried out in cooperation with industrial partners. More and more students are involved in such projects each year. They will thus gain an overview of the real needs of the industry, which contributes significantly to the mission of the technical university.

In 2021, CMV succeeded in developing cooperation with industry in the field of applied research in the form of contract research and joint research projects. As of December 31 2021, the number of employees working on CMV's research tasks was 65. This year, the volume of contract research reached almost CZK 9 million. In collaboration with the application sphere, 34 research projects were implemented in 2021, of which 10 were within the TRIO (MIT) programme, 18 projects were implemented in the TA CR calls, 3 in the OP EIC programme and one within the MoI call. The remaining two projects carried out with industrial partners were from the prestigious family of projects in the H2020 programme.

In 2021, CMV researchers participated in the implementation of 11 basic research projects, which were supported by the CSF, and CMV employees were the recipients of several "mobility" (MEYS) and two Interreg grants. A total of 59 projects with a total financial volume of more than CZK 65 million were implemented at CMV in 2021. As in previous years, CMV employees actively participate in science-popularisation events, such as the Brno Festival of Science SMR, Night of Scientists and others.

Details about CMV can be found on the website **www.materials-research.cz**.

Centre for Sensory, Information and Communication Systems (SIX)

The SIX Centre was established in 2010 as a joint initiative of FEEC institutes engaged in research and development of sensor systems, information and communication technologies. The aim of this initiative was to link their common research interests and to exploit the synergies achieved to work on large-scale complex research projects.

In recent years, it is possible to observe a growing share of applied research in the professional activities of the SIX Centre, which is a clear signal that the workplace is successfully fulfilling its role as a regional research centre connecting the activities of academia and industry. This fact also complements the more than 10 million volume of contract research contracts implemented in collaboration with industrial companies in 2021, which is 35% of all non-public funds obtained from contract research at the faculty.

Also this year, SIX Centre researchers had to deal with a number of limitations arising from the ongoing COVID-19 pandemic, both during face-to-face meetings in the workplace and during attendance of seminars and meetings with industrial partners. Due to their high commitment, the set goals of running projects and agreed deadlines for industrial contracts were not significantly affected, although this was often not possible without the transformation of their homes into R&D workplaces due to having to work from home.

Further information about the SIX Centre is available on the website **www.six.feec.vutbr.cz**.

Centre for Research and Utilization of Renewable Energy Sources (CVVOZE)

The research centre concentrates its research, development and innovation capacities on dealing with complex issues of renewable energy sources. The research teams of the centre deal with problems in the field of chemical and photovoltaic energy sources, electro-mechanics, electrotechnology, electric drives, electric power engineering, nuclear energy and industrial electronics in a total of five basic research areas: optimisation of electromechanical energy conversion; chemical and photovoltaic energy sources; production, transmission, distribution and use of electricity; automation and sensor technologies and research of the tripping process in switching devices.

In 2021, according to the WoS database, 28 journal publications with an impact factor were published within the Centre, of which 20 were in the Q1 or Q2 category according to the order of the journal.

The centre is focused not only on basic research, but also on deepening cooperation between FEEC and the application sphere and on accelerating the transfer of new technologies into industrial practice. All CVVOZE laboratories form a unique infrastructure that addresses important industrial partners, whose production activities are closely linked to the research activities carried out.

In collaboration with companies in the industrial sector (TA CR and MIT projects), a total of 30 applied research projects were implemented within CVVOZE.The obtained funds for applied research projects amounted to CZK 51 million for the Centre. Significant applied research projects supported by the TACR agency include Intelligent Energy Networks, Cyber-physical twin of tomorrow's urban infrastructure and High-speed systems for use in thermonuclear fusion.

The great success of the centre is also the acquisition of almost CZK 17 million in contract research contracts for industrial companies, which is 57% of all non-public funds obtained from contract research at the faculty.

In 2021, CVVOZE made a significant contribution to the successful completion of the European LIFE GRID project entitled Greenhouse Gas Reduction Process through an Innovative High Voltage Circuit Breaker Development, the main undertaker of which was General Electric, based in Lyon, France. The main goal of the project was to map the properties of "green gas", g3, which is to become a future alternative to the environmentally harmful SF6, which is currently used as an insulating medium and extinguishing medium in medium and high voltage transmission and distribution facilities. CVVOZE researchers have created a comprehensive database of the radiation properties of "green gas", which has significantly contributed to the preparation of a prototype high-voltage switch presented in Lyon.

An important part of the CVVOZE centre is the large Power Laboratories infrastructure (CVVOZEPowerLab), which consists of the High Current Laboratory and the High Voltage Laboratory, located in Professor List's Science and Technology Park. The construction of this infrastructure was motivated mainly by the need of the research community to carry out experiments in the areas of advanced diagnostics of electric discharge generated in electrical switchgear and precise diagnostics of insulating materials used for high-voltage equipment.

More detailed information on the activities and focus of the CVVOZE centre can be found on the website **www.cvvoze.cz**.

1.4 Mission, vision and strategic goals of BUT

BUT has clearly defined strategic goals in the BUT Strategic Plan for the period from 2021+. BUT's main long-term priorities are internationalisation, the international dimension in educational and creative activities, and excellence in science and research.

The long-term goal of BUT management is to be a strong quality university, able to compete with major universities in Europe and around the world, especially in the field of educational, creative and artistic activities. The achievability of ambitious goals and the feasibility of the presented tools are conditioned by the long-term stable economic development of the Czech Republic, a stable legislative and economic environment.

Vision of BUT 2030

BUT is

- a technically diversified university with a significant position among the world's universities in terms of international competitiveness of graduates, reputation and percentile position in international rankings;
- a renowned technical university creating conditions for the admission and study of foreign students studying in English and in international study programmes with the target of at least 8% of such participation in 2030;
- an educational institution with an international team of educators and researchers significantly influencing technological progress;
- an institution creating and supporting culture and social events in a local as well as in an international context;
- a research organisation defining research, development and innovation trends;
- a platform for establishing successful start-up and spin-off companies;
- a partner for the establishment and development of industrial companies.

At BUT, there is a stable place not only for the staff who provide quality educational and research, creative and artistic activities, but also other employees who organise both the main activities and all other support and service activities for the benefit of the university. BUT will create a space for all those supporting its teams in all activities. BUT is made up of people who are united by the same values and traditions, people connected with the vision and brand of BUT.

BUT's competitiveness will be ensured not only by international compatibility, but also by diversity, originality and uniqueness, with an emphasis on its region, tradition and history. BUT will be an important factor in the identity and functioning of the city of Brno.

Goals of BUT 2021+

The following priority objectives are defined within the BUT 2021+ Strategic Plan:

- Priority objective 1: To develop competencies directly relevant to life and practice in the 21st century
- Priority objective 2: To improve the availability and relevance of flexible forms of education
- Priority objective 3: To increase the efficiency and quality of doctoral studies
- Priority objective 4: To strengthen strategic management and effective use of research and development capacities at BUT
- Priority objective 5: To build capacities for the strategic management of BUT
- Priority objective 6: To reduce the administrative burden of BUT staff so that they can fully devote themselves to their mission

The main goal of BUT is to guarantee a high quality of educational and scientific activities, to increase the quality of research so that BUT sets scientific trends and attracts excellent teachers and researchers, and to offer such expertise and authority in the third role, which will be useful and visible within the region, the Czech Republic and globally.

To increase the performance of BUT in the evaluated criteria for which BUT funds are (and especially will be) allocated.

The fulfilment of these goals will be indicated, among other things, by a shift in the relevant university rankings.

BUT will be:

- a technical university of first choice offering a valuable higher education based on the synergy of technical, economic and artistic disciplines with a significant share of teaching in English;
- a prestigious research university with high-quality and internationally respected research teams that can determine international research trends, and acquire significant industrial resources and prestigious projects;
- a homogeneous but diverse institution with a high institutional culture;
- a workplace that will create an attractive free environment for research, development and educational activities for the academic community and which will provide employees with top administrative and technical services.

BUT will actively participate in changes in evaluation criteria within the Czech Republic and in their modification. It will promote appreciation of the importance of technical universities for the development of the Czech Republic.

BUT and each of its faculties and universities will have clearly defined research priorities and developed cooperation with practice. It will regularly evaluate and adjust its plans in response to public demand, transformed into public tenders to support research projects and the need for enterprises, using a system of performance appraisals for academics and researchers.

In order to strengthen the international credibility of studies at BUT, and thus to potentially increase interest in studying here, BUT faculties and higher education institutes will strive for the possible accreditation of some study programmes by recognised foreign accreditation agencies.

BUT will take further measures to renew, use and share its built infrastructures and their wider integration into the Roadmap of large infrastructures in the Czech Republic. It will establish rules for the acquisition of new, costly equipment in line with the policy of open access to this capacity within the international research area.

BUT will continue to support students with special needs through the Alfons Counselling Centre.

BUT will emphasise branding, i.e. the connection of employees, students and graduates with the BUT brand and the position of BUT. BUT will also strengthen awareness of the BUT brand outside the Czech Republic, in Europe and globally.

BUT is aware of its own socio-cultural and environmental responsibilities and will continue to strengthen and develop them. BUT will continue in all its activities in accordance with the signed Call for Assistance in Reducing Emissions in the City of Brno, which was signed in February 2020 by the Rector of BUT and the Mayor of Brno, along with 28 other major companies and institutions in Brno.

1.5 Achieved goals within the BUT Strategic Plan for 2021

Priority objective 1: To develop competencies directly relevant to life and practice in the 21st century

BUT appreciated and promoted the work of successful and quality teachers. Academic staff involved in the creation of study programmes were motivated and informed about the possibilities of career development, which is duly registered in the unified IS SHAP (Academic Staff Evaluation System). At the same time, BUT focused on standardising the acquisition of feedback on teaching, and the results of the evaluation were incorporated into the Addendum to the Report on Quality Assurance and Internal Quality Assessment for 2020.

As part of strengthening the link between study and practice and preparation for future employment, BUT modernised its web portal for graduates and improved cooperation and communication with graduates. BUT has also become part of the Group of Alumni Centres in the Czech Republic under the auspices of the University of Economics in Prague, with the aim of sharing current needs, know-how, data, surveys and "best practices" in working with graduates.

BUT also strengthened the international dimension of higher education, and an Action Plan for Internationalisation was created for the period 2021–2023. In 2021, the basis for the analysis of the current state of internationalisation at BUT in the field of foreign relations, study agenda and science and research was created. BUT also actively cooperated on the Study in Brno project, which involves large Brno universities (BUT, MUNI and MENDELU).

Priority objective 2: To improve the availability and relevance of flexible forms of education at BUT

Due to the pandemic, like most universities, BUT was forced to move education back to the online space. Thanks to financial support from development projects, faculties and

departments of BUT had the opportunity to strengthen the background for distance forms of teaching, both technical and methodological. Special attention was paid to the development of counselling services for BUT students, including those with specific needs.

Priority goal 3: To increase the efficiency and quality of doctoral studies at BUT

Due to the fact that a legislative reform of doctoral studies is being prepared, some goals from 2021 were moved to 2022. The National Education Fund at BUT analysed the quality of doctoral studies this year. This analysis serves to improve the conditions for successful study for doctoral students. BUT continued its activity in the popularisation podcast Technically Taken in Science (2nd place in the Public Sector category in the Golden Semicolon marketing competition). Dozens of articles from the field of education and science were published on the website www.zVUT.cz and in press releases about the most interesting news, which had a great response in the media. A booklet with tips for researchers and doctoral students on the popularisation and media coverage of their research was created. The brochure is available in Czech and English, it is available in printed and electronic versions. It is also complemented by three animated videos with instructions on how to popularise science.

Priority objective 4: Strengthen strategic management and effective use of research and development capacities at BUT

In coordination with the faculties and university institutes of BUT, it ensured the modification of the BUT information system for the purposes of internal evaluation, reporting and registration of published and applied results of science and research, including storage of results and research data in the university repository. Currently, the display of information on AIS and quartiles is secured within the records of publication results and also within the records of employee activity results (IS SHAP).

The Open Science Strategy at BUT was created. A working group of representatives of research-oriented faculties participated in its creation. In the field of Open Science, BUT focuses mainly on the following areas: storage and publication of scientific publications (Open Access Publications) and university qualification theses; management of research data according to FAIR Data principles; open access to research infrastructures and open science system support for researchers (presentation of principles and creation of conditions for their implementation).

BUT provided access to key electronic information sources within the CzechELib project and from its own resources according to the needs of project developers and teachers. BUT also included the recommendations of the International Evaluation Panel (IEP) at the level of its faculties and university institutes.

Priority objective 5: To build capacities for strategic management of BUT

BUT has strengthened its analytical activities, focused on the creation of internal and external analyses, to support its strategic management.

Great attention was paid to the prevention of publishing in predatory magazines. The staff of the Central Library (CC) organised several seminars on this topic. A description of the basic features of the unfair practices of these publishers, as well as ways to identify suspicious journals, is also available on the CC's website. In connection with the threat of predatory magazines, the university management decided to tighten the conditions for providing support for open magazines within the Open Access Fund.

In the spring of 2021, the historically first university-wide evaluation of the activities of academic and scientific, research and development staff took place according to defined criteria (according to Directive 1/2021) using part of the IS SHAP.

In cooperation with twenty universities, the Handbook of Crisis Preparedness of Higher Education Institutions, which aims to increase the preparedness of higher education institutions for crisis situations, was published.

On February 12, 2021, BUT received the HR Award. The European Commission has thus confirmed the position of the Brno University of Technology among European research institutions. Of Brno universities, MENDELU and one of the faculties of Masaryk University, along with CEITEC MU already have the HR Award. BUT requested this international evaluation for the entire university at the end of 2019 and after more than a year succeeded in the certification process, without reservations and without comments.

Priority objective 6: To reduce the administrative burden of BUT staff so that they can fully devote themselves to their mission

BUT has begun to unify the technological and content aspects of the BUT information system by transferring applications to the web interface. BUT also supported the development of professional apparatus providing support services for academic staff and it owns operation (BUT Management Information System, technical development of the administrative study agenda or increasing the level of cyber security).

1.6 Activities of the BUT Academic Senate in 2021

In 2021, the BUT Academic Senate (hereinafter referred to as the AS) held twelve regular and one external meetings. The negotiations of the academic senates of universities in the Czech Republic, including the AS faculties, were still significantly affected by the COVID-19 pandemic throughout 2021. Five full-time AS meetings took place – the inaugural meeting on June 15, 2021, the external meeting from June 29 to July 1, 2021 in Valeč, then the first meeting after the holidays in September and two meetings in October. At the last physical meeting in October, a candidate for appointment as Rector was elected. Since November, the AS meetings have again been held virtually.

The AS distance negotiations took place in accordance with Article 13a of the BUT AS Rules of Procedure through MS Teams. The distance meetings of the AS working committees – economic, legislative, commission for creative activity and pedagogical committees of the AS, took place in a similar way, especially the meetings of the EC AS, which as always at the beginning of 2021 intensively discussed the BUT budget rules for 2021 and then the BUT budget for 2021. AS, as every year, approved the annual activity report and the annual report on the management of BUT the previous year, and commented on the property rights of BUT. In the area of AS legislation, it discussed school-wide internal regulations and the internal regulations of BUT faculties – especially Appendix No. 2 to the BUT Scholarship Regulations and BUT Organisational Regulations, which according to the BUT Statute is a BUT internal standard approved by the AS. Furthermore, the AS discussed and approved the amendments to the internal regulations of the FBM – Rules of Procedure of the FBM Scientific Council and the FBM Disciplinary Rules, amendments to the rules of the FCE, FCH and FIT Scientific Council, amendments to the AS FME Rules of Procedure, new wording of the FA Scientific Rules and Rules of FFA Art Council.

In the area of legislation, the AS was also preparing for the approaching end of its extended term of office – according to the Crisis Act No. 188/2020 Coll., which was valid only in 2020, after the end of the state of emergency in the Czech Republic. As a result, the inaugural meeting of the new AS elected in the November 2020 elections did not take place until June 15, 2021, and the new AS's term of office was postponed until June 2021 to June 2024. During the inaugural meeting, the new Chairman of AS, the Chairman of the Chamber of academic staff of AS and the chairperson of the Student Chamber of AS, vice-chairmen of AS and working committees of AS were established in a new staff – economic, legislative, pedagogical and a committee for creative activities.

One of the main points of the AS external meeting in Valeč was the announcement of the election of the candidate for appointment by the Rector as chairman of the AS, and approval of the Schedule for the election of the candidate for appointment by the Rector for February 2022 to January 2026. At the same time, the AS called on the academic senates of the faculties to appoint representatives to the election commission for the election of a candidate for appointment as Rector. At the first meeting of the AS after the holidays, held in September, the election committee was appointed on the basis of the nomination of the AS faculties, and Josef Štětina, a representative of the AS members, was appointed chairman of the committee. In preparation for the election, the members of the AS then cooperated with the election committee for the election of a candidate for appointment by the Rector. At the October meeting of the AS, the Chairman of the election committee handed over to the Chairman of the AS the Candidate List for the election of a candidate for Rector's appointment, and the AS then convened the assembly of the BUT Academic Community (hereinafter AC) according to the election schedule. There were three AC meetings – at FCE, FEEC and FBM, which were streamed so that all AC members could follow their process through MS Teams. A Discussion Forum was set up on the BUT website to collect ideas for discussion with the proposed candidates and to ask questions from AC members. Discussion forums for asking proposed candidates for election of the Rector questions, using SharePoint, have proved their worth.

The actual election of the candidate for appointment as Rector took place at the meeting of the AS on October 26, 2021. The members of the AS voted for two proposed candidates – Ladislav Janíček, the current BUT bursar, and Pavel Zemčík, the dean of FIT. Ladislav Janíček was elected the new Rector of BUT by a convincing majority of all AS members. The election itself had no shortcomings and corresponded to the significance of the event, thanks especially to the chairman of the election commission Josef Štětin for perfect election management, but also to other members of the election commission who were involved in organisational matters. At the November meeting, members of the Senate evaluated the election process, noted some recommendations for the following elections and concluded that the announcement of the election and approval of the schedule were significantly affected by the consequences of the COVID-19 pandemic, the extension of the former AS, and the related decision to announce the election to the new AS after its establishment. All the dates listed in the schedule corresponded to this situation.

From September to December, in addition to the preparation and subsequent election of a candidate for Rector, the AS discussed in particular the Addendum to the Report on Quality Assurance and Internal Quality at BUT, 2020, the Rector's proposal to establish a Fund for Research , Appendix No. 1 to the BUT Budget for 2021, BUT Property Rights, Appendix No. 3 to the BUT Rectorate Organisational Rules, and university institute documents – final reports concerning the evaluation of teaching quality of students, conditions for admission to study for the new academic year, and the strategic plans of CESA, CEITEC and IFE.

Throughout 2021, the BUT AS Chamber of Students (hereinafter referred to as SKAS) represented the votes and interests of BUT students at the university level. At the beginning of the year, SKAS organised a virtual discussion with students, which summarised the impressions and comments on the first year from the perspective of studying at the university at the time of the pandemic. In connection with the epidemiological situation and its effects on students, SKAS continued to provide information about current regulations for students through social networks.

In June, newly elected senators took up their positions in SKAS. Thanks to the inclusion of the election winners in the discussions immediately after the election, the activities of SKAS continued smoothly. The new senators were introduced in more detail in the form of interviews in three issues of the university magazine Události at BUT.

In June 2021, SKAS continued the traditional evaluation of the activities of active students through the Internal Student Support Fund. In the first round, 13 proposals out of a total of 18 received were supported. The organisers of the EBEC student technical competition and the organisers of e-sports competitions received the highest evaluation, and activities aimed at supporting students' awareness at the FBM, FIT and FEEC faculties were also awarded. SKAS also praised the publication of the second issue of Bublina magazine at FFA and the student blog at FCE.

The second round of evaluation took place at the end of the year. Out of a total of 32 submitted proposals, up to 25 student activities were awarded. Autumn student events had the best ratings: Engineering Stairs (FME), Music from FEEC and Mov'in Europe (FBM). SKAS also praised the students' sports teams in Formula Student competitions and in university ice hockey matches. Welcoming and orientation events for first-year students of FIT, FEEC and FCH were also awarded. SKAS supported the presentation of the Bohuslav Fuchs Awards at the FA, the third issue of the Bublina magazine at FFA, and various social events for students, especially at FIT.

The freshman handbook has been updated for the upcoming academic year 2021/2022. Representatives of SKAS took part in the BUT Zaškolovák event, which took place in two shifts– one was exclusively for future first-year students, the other for future senior students. Both tours were conceived as cognitive and educational courses, where newcomers could learn information from instructors from among the ranks of current BUT students – about the university, their faculties, sports, and the student clubs operating at BUT. The event was attended by a total of 692 people and took place in accordance with applicable anti-epidemiological regulations.

In the light of the social debate on ethics and safety in schools, SKAS initiated a dialogue with the university management on the amendment of the BUT Code of Ethics, starting with SKAS's contribution to the BUT AS external meeting on this issue. At the end of the year, SKAS joined an international activist initiative and shared contributions on equality, security and ethics on its social networks for 16 days.

SKAS advocated for the provision of volunteers to address the situation after the natural disaster in Moravia and for the charity fundraiser for the Home Hospice of St. Lucie, where it also contributed financially.

In October, SKAS organised a meeting of the student chambers of academic senates of faculties, student organisations and associations. The meeting took place in the premises of the student club U Kachničky on the FIT campus. The programme included a mutual presentation of current activities and events, reporting on university events such as school or university hockey, and SKAS also provided information about events at BUT (election of the rector, reports from the Supervisory Board of BUT Halls of Residence and canteens, etc.), as well as representation in Student Chamber of the Council of Higher Education Institutions.

On the occasion of November 17, SKAS representatives took part in events in Prague (the Velvet Students concert, Jan Opletal Award ceremony, November 17 at Hlávka dormitory, march through Žitná street, memorial event in Albertov) and in Brno on Svobody Square, where, along with representatives of other Brno universities, they laid wreaths in honour at the monument to November 17. SKAS representatives also took part in the Conference of Academic Senators in Prague, organised by the Student Chamber of the Council of Higher Education Institutions at the University of Economics.

At the national level, at the beginning of the year, BUT delegate Martin Horváth succeeded in obtaining the position of 1st Vice-Chairman in Student Chamber of the Council of Higher Education Institutions, thus continuing the function of the outgoing 1st Vice-Chair Kruljacová, who held this position until the end of 2020. In December SKAS hosted the external meeting of the Student Chamber of the Council of Higher Education Institutions in the premises of CEITEC BUT, and subsequently within the social programme at the student club U Kachničky at FIT.

The external meeting of the entire BUT AS took place from June 29 to July 1, 2021. The aim was to further deepen the partnership between the management of BUT and AS based on the basic principles of academic self-government of the university. Within the programme, co-operation with the Council of Higher Education Institutions (RVŠ) continued in all areas of its operation, especially in the areas of economics, legislation and areas for scientific activity. The topics: strategy, economics, science and research or legislation can be described as key in the AS's negotiations with the BUT management. During the meeting, Rector Štěpánek and Bursar Janíček presented information on strategy and economics. The discussion of the members of the AS, held within the negotiations on the issue of the AS's creative activity with the participation of Rector Štěpánek, Bursar Janíček and the Vice-Rector for Science Grmely, concerned the proposal to establish a Development Fund associated with the draft statute of this fund submitted to the AS for

approval. This proposal was not approved, but the AS did not reject it and stated that it expects to return to this issue in the future. It is also necessary to mention especially the important negotiations of the EC AS on the submitted draft Appendix No. 1 to the BUT Budget for 2021 and the AS Legislative Commission meeting on AS legislation, associated with the consequences of the COVID-19 pandemic, related to the need to extend the term of the previous AS. The programme also included SKAS' contributions about its activities in the past academic year and about the activities of the Student Chamber of the Council of Higher Education, where BUT has actively involved students. SKAS also addressed the issue of a safe academic environment, and SKAS representatives presented students' views on the issue of the Internal Grant Competition for students of the first to third year of accredited doctoral study programmes (KiNG BUT).

In addition to the participation of the majority of AS members, the participation of all members of the BUT management – the Rector, the Bursar, the Vice-Rectors, the Chancellor and the Director of CIS – can be assessed very positively. A significant contribution was the representative participation of guests from the Council of Higher Education – the full-time participation of the chairperson of the Council of Higher Education Economic Committee, Lenka Valová, who gave a detailed lecture on the current situation in the field of economic and wage issues at universities. The next two lectures were both given virtually: in the field of science and research by the chairperson of the Scientific Committee of the Council of Higher Education, Vlasta Radová, and in the field of legislation by the chairman of the Legislative Committee of the Council of Higher Education, Marek Hodulík. Despite their workload, representatives of the Council of Higher Education also participated again this year, and through their presentation they informed the members of the AS about current events in the field of Council of Higher Education. The external meeting showed, as always, great importance in the detailed discussions of the meeting participants concerning all areas of the agenda. Following on from the discussed areas, and the proposals submitted to the AS for discussion or approval, the AS adopted the relevant resolutions at its final standard meeting.

All the above activities of AS members continue to lead to further deepening of cooperation between BUT and AS management, as a natural and traditional part of academic life and as a key element of the active involvement of AC members in BUT's development, including further optimisation of communication between individual levels of university management, self-government, the academic community – teachers, students – and all BUT employees.

2 Basic information about the University

2.1 The full name of the university, the commonly used abbreviation, the seat of the university and all departments

Brno University of Technology
BUT
Antonínská 548/1, 601 90 Brno
www.vut.cz

Faculties (sorted by establishment)

Faculty of Civil Engineering BUT
FCE
Veveří 331/95, 602 00 Brno
www.fce.vutbr.cz

Faculty of Mechanical Engineering BUT
FME
Technická 2896/2, 616 69 Brno
www.fme.vutbr.cz

Faculty of Electrical Engineering and Communication BUT
FEEC
Technická 3058/10, 616 00 Brno
www.fekt.vut.cz

Faculty of Architecture BUT
FA
Poříčí 237/5, 639 00 Brno
www.fa.vutbr.cz

Faculty of Chemistry BUT
FCH
Purkyňova 464/118, 612 00 Brno
www.fch.vut.cz

Faculty of Business and Management BUT
FBM
Kolejní 2906/4, 612 00 Brno
www.fbm.vutbr.cz

Faculty of Fine Arts BUT
FFA
Údolní 244/53, 602 00 Brno
www.favu.vut.cz

Faculty of Information Technology BUT
FIT
Božetěchova 1/2, 612 66 Brno
www.fit.vut.cz

University institutes

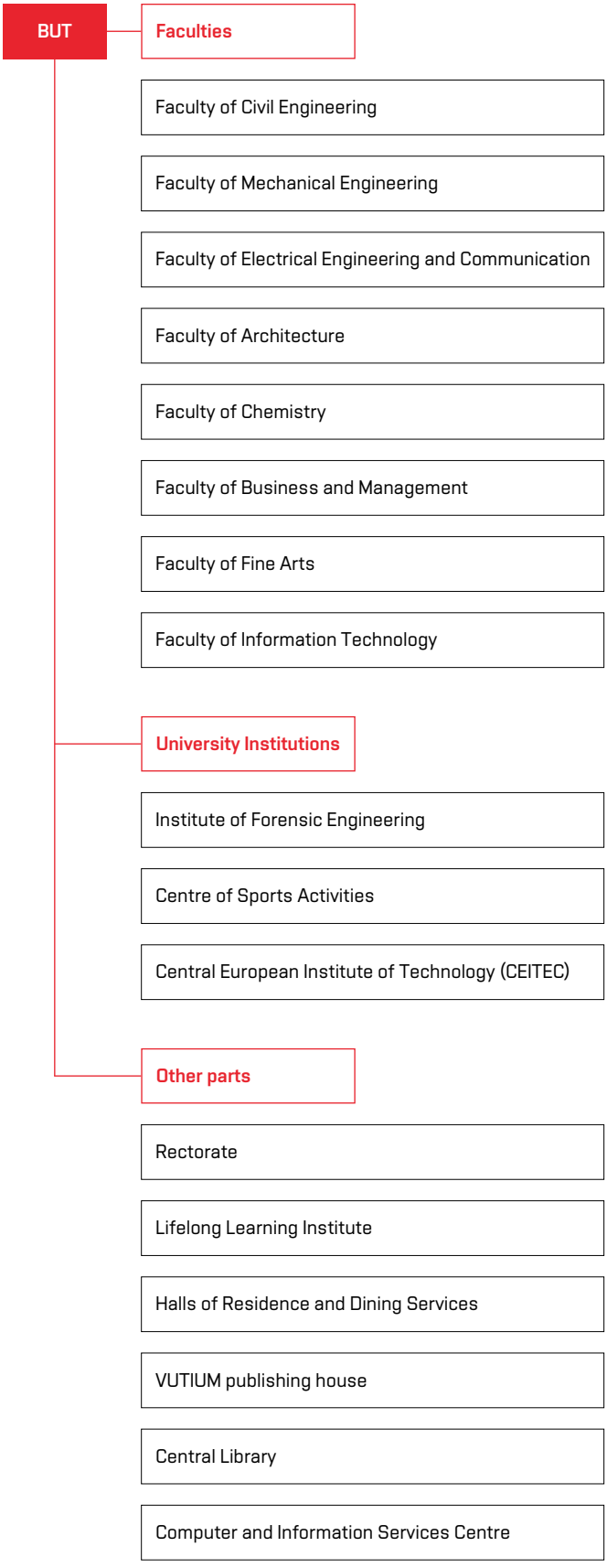
Institute of Forensic Engineering BUT
IFE
Purkyňova 464/118, 612 00 Brno
www.usi.vutbr.cz

Centre of Sports Activities BUT
CESA
Technická 2896/2, 616 69 Brno
www.cesa.vutbr.cz

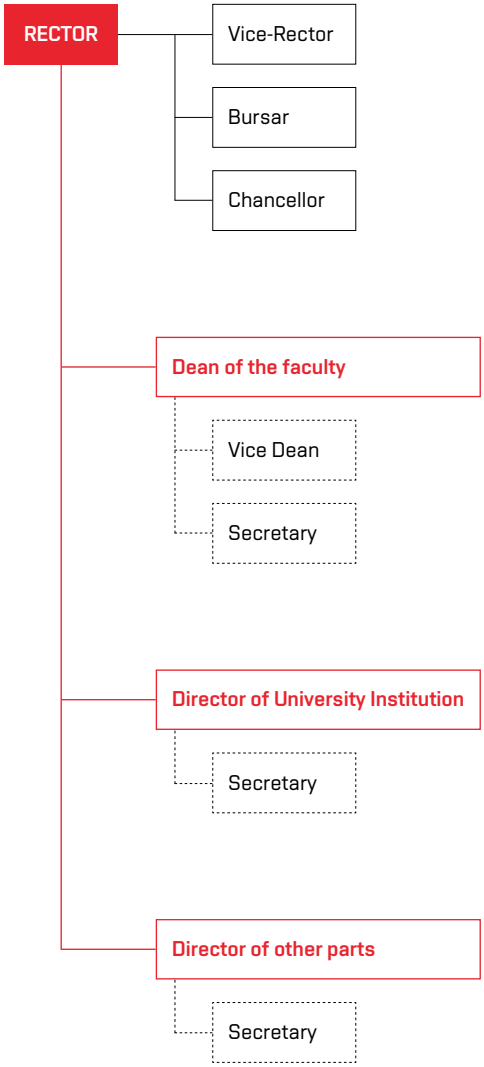
Central European Institute of Technology BUT
CEITEC
Purkyňova 656/123, 612 00 Brno
www.ceitec.cz

2.2 University organisation chart

Organizational chart of BUT



Management structure of BUT



2.3 Composition of the Scientific Board, the Administrative Board, the Academic Senate and other university bodies

BUT Scientific Board

Chairman
- prof. RNDr. Ing. Petr Štěpánek, CSc., dr. h. c.

Members
- prof. RNDr. Vladimír Aubrecht, CSc.
- prof. Ing. Miroslav Bajer, CSc.
- Assoc. prof. Ing. Vojtěch Bartoš, Ph.D.
- Assoc. prof. MgA. Filip Cenek
- prof. RNDr. Miroslav Doupovec, CSc., dr. h. c.
- Ing. Karel Endlicher
- Ing. Miloš Filip
- prof. acad. sculp. Michal Gabriel
- prof. Ing. Lubomír Grmela, CSc.
- prof. Ing. Martin Hartl, Ph.D.
- Ing. Roman Havlín
- prof. Ing. Jiří Hirš, CSc.
- prof. PaedDr. Radek Horáček, Ph.D.
- Assoc. prof. MgA. Milan Houser
- Assoc. prof. Ing. arch. Jan Hrubý, CSc.
- prof. Ing. arch. Petr Hrůša
- prof. Ing. Tomáš Hruška, CSc.
- Assoc. prof. Ing. Jaroslav Katolický, Ph.D.
- Ing. Jaroslav Klíma
- Assoc. prof. Ing. Karel Kouřil, Ph.D.
- Ing. arch. MArch Jan Kristek, Ph.D.
- prof. Ing. Jiří Málek, DrSc.
- prof. RNDr. Ivana Márová, CSc.
- Ing. Ilona Müllerová, DrSc.
- prof. Ing. Drahomír Novák, DrSc.
- Ing. Eduard Palíšek, Ph.D., MBA
- Assoc. prof. RNDr. Juraj Pančík, Ph.D.
- prof. Ing. Karel Pospíšil, Ph.D., LL.M. – since June 4, 2021
- prof. Ing. Karel Rais, CSc., MBA
- prof. Ing. Robert Redhammer, PhD.
- prof. Ing. Mária Režňáková, CSc.
- Ing. Dětřich Robenek
- prof. Ing. Petr Sáha, CSc.
- prof. Ing. Lukáš Sekanina, Ph.D.
- Ing. Martin Slezák
- prof. RNDr. Tomáš Šikola, CSc.
- prof. Ing. et Ing. Stanislav Škapa, Ph.D.
- prof. Ing. arch. Vladimír Šlapeta, DrSc.
- prof. Ing. Pavel Václavek, Ph.D.
- Assoc. prof. Ing. Aleš Vémola, Ph.D. – till June 3, 2021
- prof. RNDr. Peter Vojtáš, DrSc.
- prof. MVDr. Lenka Vorlová, Ph.D.
- prof. Ing. Radimír Vrba, CSc.
- prof. Ing. Martin Weiter, Ph.D.
- prof. Dr. Ing. Pavel Zemčík

BUT Administrative Board

Chairman
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- Mgr. Stanislav Moša
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- prof. RNDr. Eduard Schmidt, CSc. – till November 10, 2021 (†)
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- Ing. Pavel Maxera, Ph.D. – till May 15, 2021
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- prof. Ing. Mária Režňáková, CSc.
- prof. Ing. et Ing. Stanislav Škapa, Ph.D. – since May 15, 2021
- prof. Ing. arch., DrSc. Vladimír Šlapeta
- prof. Ing. Josef Štětina, Ph.D.

BUT Academic Senate

(Functional period from November 2017 to November 2020.
According to Act No. 188/2020 Coll. the functional period of this AS ended on June 14, 2021.)

Chairman
- Assoc. prof. Dr. Ing. Petr Hanáček

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- Ing. Anna Kruljacová, MSc.

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Chairperson of the chamber
- prof. Ing. Eva Gescheidtová, CSc.

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- Ing. Petr Beneš, CSc.
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- Ing. Albert Bradáč, Ph.D.
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- MgA. Tomáš Hrůza
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- Mgr. Bc. Helena Musilová
- Ing. Viktor Ondrák, Ph.D.
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.
- RNDr. Pavel Popela, Ph.D.
- PaedDr. Milan Slezáček
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.
- prof. Ing. Josef Štětina, Ph.D.

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Chairperson of the chamber
- Ing. Anna Kruljacová, MSc.

Members
- Bc. Diana Hodulíková
- Ing. Radek Hranický
- Ing. Daniel Janík
- Ing. Tereza Konečná
- Ing. Pavel Maxera
- Ing. Jakub Palovčík
- Ing. Daniel Skřek
- Bc. Veronika Špundová

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Legislative Committee

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- Mgr. Bc. Helena Musilová

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- prof. Ing. Eva Gescheidtová, CSc.
- RNDr. Pavel Popela, Ph.D.
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.

Students
- Bc. Diana Hodulíková
- Ing. Radek Hranický
- Ing. Tereza Konečná
- Ing. Anna Kruljacová, MSc.
- Ing. Pavel Maxera

Economic Committee

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- Ing. arch. Nicol Galeová
- MgA. Tomáš Hrůza
- Assoc. prof. Ing. Jiří Jaroš, Ph.D.
- Ing. Viktor Ondrák, Ph.D.
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.
- PaedDr. Milan Slezáček
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.
- prof. Ing. Josef Štětina, Ph.D.

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- Ing. Daniel Janík
- Ing. Tereza Konečná
- Ing. Anna Kruljacová, MSc.

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Students
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- Ing. Tereza Konečná

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Chairman
- Ing. Albert Bradáč, Ph.D.

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- Assoc. prof. Ing. arch. Ivo Boháč, Ph.D.
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- Assoc. prof. Ing. Jiří Jaroš, Ph.D.
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.
- Assoc. prof. Ing. Josef Štětina, Ph.D.

Students
- Ing. Radek Hranický
- Ing. Anna Kruljacová, MSc.
- Ing. Pavel Maxera

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(Functional period from June 2021 to June 2024)

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Vice-Chairpersons
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.
- Ing. Anna Kruljacová, MSc.

Chamber of Academic Staff of AS BUT

Chamber Chairman
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.

Members
- Assoc. prof. Mgr. Tomáš Apeltauer, Ph.D.
- Ing. Petr Beneš, CSc.
- Assoc. prof. Ing. arch. Ivo Boháč, Ph.D.
- Assoc. prof. Ing. Pavel Diviš, Ph.D.
- Ing. arch. Nicol Galeová
- Assoc. prof. Dr. Ing. Petr Hanáček
- MgA. Ondřej Homola
- MgA. Tomáš Hrůza
- Assoc. prof. Ing. Jiří Jaroš, Ph.D.
- prof. Ing. Alena Kocmanová, Ph.D.
- Ing. Pavel Krečmer, Ph.D.
- Mgr. Bc. Helena Musilová
- RNDr. Pavel Popela, Ph.D.
- Assoc. prof. Ing. Vlasta Sedláková, Ph.D.
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.
- prof. Ing. Josef Štětina, Ph.D.
- prof. Ing. Martin Trunec, Dr.

Student Chamber of AS BUT

Chairperson of the Chamber
- Ing. Anna Kruljacová, MSc.

Members
- Bc. Diana Hodulíková
- Ing. Daniel Janík
- Viktor Konupčík
- Ing. Petra Kosová
- Ing. Katarína Rovenská
- Ing. Daniel Skřek
- Bc. Veronika Špundová
- Bc. Jan Zahrádka

Regular guests at AS BUT
- Ing. Albert Bradáč, Ph.D. – IFE
- PaedDr. Milan Slezáček – CESA

Working Committee of AS BUT in Brno

Legislative Committee

Chairperson
- Mgr. Bc. Helena Musilová

Members
- Assoc. prof. Ing. arch. Ivo Boháč, Ph.D.
- RNDr. Pavel Popela, Ph.D.
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.

Students
- Bc. Diana Hodulíková
- Viktor Konupčík
- Ing. Petra Kosová
- Ing. Anna Kruljacová, MSc.
- Bc. Jan Zahrádka

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- Ing. arch. Nicol Galeová
- MgA. Ondřej Homola
- MgA. Tomáš Hrůza
- Assoc. prof. Ing. Jiří Jaroš, Ph.D.
- prof. Ing. Alena Kocmanová, Ph.D.
- Ing. Pavel Krečmer, Ph.D.
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.
- Assoc. prof. Ing. Vlasta Sedláková, Ph.D.
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.
- prof. Ing. Josef Štětina, Ph.D.
- prof. Ing. Martin Trunec, Dr.

Students
- Bc. Diana Hodulíková
- Ing. Daniel Janík
- Viktor Konupčík
- Ing. Anna Kruljacová, MSc.
- Ing. Katarína Rovenská
- Ing. Daniel Skřek
- Bc. Jan Zahrádka

Pedagogical Committee

Chairman
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.

Members
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- Assoc. prof. Ing. arch. Ivo Boháč, Ph.D.
- MgA. Ondřej Homola
- Mgr. Bc. Helena Musilová

Students
- Ing. Daniel Janík
- Viktor Konupčík
- Ing. Petra Kosová
- Ing. Katarína Rovenská
- Ing. Daniel Skřek
- Bc. Jan Zahrádka

Committee for Creative Activities

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- Assoc. prof. Ing. arch. Ivo Boháč, Ph.D.
- Ing. arch. Nicol Galeová
- MgA. Tomáš Hrůza
- Assoc. prof. Ing. Jiří Jaroš, Ph.D.
- Ing. Pavel Krečmer, Ph.D.
- Assoc. prof. Ing. Tomáš Opravil, Ph.D.
- Assoc. prof. Ing. Vlasta Sedláková, Ph.D.
- Assoc. prof. Ing. Miloslav Steinbauer, Ph.D.

Students
- Ing. Petra Kosová
- Ing. Anna Kruljacová, MSc.
- Ing. Katarína Rovenská

2.4 Representation of the university in the representation of universities

Czech Rectors' Conference
- prof. RNDr. Ing. Petr Štěpánek, CSc., dr. h. c. – Vice-President for Economic Affairs

BUT representatives in the Council of Higher Education Institutions

BUT representatives in the Council of Higher Education Institutions
- RNDr. Pavel Popela, Ph.D.

Members of the Council of Higher Education Institutions Assembly for BUT
- Mgr. Bc. Helena Musilová

Members of the Council of Higher Education Institutions Assembly
- Ing. arch. Nicol Galeová (FA)
- Ing. Ivana Jakubová (FEEC)
- doc. Mgr. Richard Fajnor (FFA)
- Ing. Radek Kočí, Ph.D. (FIT)
- doc. Ing. Jana Korytárová, Ph.D. (FCE)
- Ing. Pavel Mráček, Ph.D. (FBA)
- doc. Ing. Tomáš Opravil, Ph.D. (FCH)
- doc. Ing. Jan Roupec, Ph.D. (FME)

Members of the Student Chamber of Council of Higher Education Institutions
- Bc. Martin Horváth – delegate
- Bc. Diana Hodulíková – substitute

2.5 Changes in internal regulations in 2021

Rules of Procedure of the BUT Scientific Council
amended by Amendment No. 2 effective as of April 13, 2021

Rules of Procedure of the BUT Academic Senate
amended by Amendment No. 2 effective as of April 13, 2021

Rules of Procedure of the BUT Internal Evaluation Council
amended by Amendment No. 2 effective as of April 13, 2021

BUT Scholarship Regulations
amended by Amendment No. 2 effective as of April 13, 2021

3 Study programmes, study organisation and educational activities

3.1 The total number of accredited study programmes described by the learning outcomes methodology

In 2021, BUT used the methodology of learning outcomes in the creation of newly accredited programmes. Within the framework of institutional accreditation, the implementation of three programmes was newly approved in 2021, and accreditation was granted by the National Accreditation Office for the other three programmes.

BUT has a total of 288 study programmes.

3.2 The role of the application sphere in the creation and implementation of study programmes

In many study programmes at BUT, expert practitioners take part in the teaching: e.g. in all study programmes at FME, in all professionally oriented programmes at FBM, and also in a number of programmes at FCH, FEEC, FCE and FIT. The practitioners are often members of committees for State Final Examinations and defences of final theses, e.g. at FA, the participation of external experts on the committees is quite common.

At the FCH, the patrons of study programmes are also appointed from among the representatives of the application sphere. Cooperation with patrons from the field of application is used in the implementation of practice and internships and the listing of topics of final theses. In 2021, the Industrial Forum, with representatives of the application sphere, academic staff and study programme guarantors, was held at FCH as a platform for evaluating the implementation of study programmes and attracting experts from practice to teaching. The faculty also organises a traditional event promoting cooperation with the application sphere, Chemistry Day, which is attended by representatives of major industrial partners cooperating with the faculty. The event is intended for both students of the faculty and the general public, especially high school students who are faced with a choice of future profession. In 2021, the event was organised online with presentations and a discussion forum of companies. The profiles of the companies and the graduates of the faculty working in them were then presented on websites and social networks. Personalisation and identification with graduates were evaluated very positively.

Selected BUT study programmes have professional practice directly in the study plan, while specific companies participate in the implementation of these internships e.g. at FA, students of newly accredited follow-up study programmes must complete an internship in an architectural office.

Students' final theses also often contain themes drawn from practice and the results of the work can be put in practice in the future. E.g. at FBM, the result of students' work is often a real business plan, and this faculty also organises consultation workshops where students solve the problems of real companies. At FBM, companies are involved not only in teaching, especially professional study programmes, but also, for example, in the development of the Business Process Management Laboratory used in teaching (especially within the professional Process Management study programme). Furthermore, in cooperation with companies, student internships, as well as other workshops for students, are organised directly in companies. There is also the Studio multimedia laboratory, run in cooperation with the company 6eye studio, which was established to support the digitalisation of teaching activities, the implementation of online workshops, conferences and seminars, and the creation of multimedia materials in marketing-oriented subjects. Another activity of the FBM is the Bootcamp for professionals programme, where representatives of the application sphere provide feedback on student projects implemented within their studies. Practitioners are also members of study programme boards and are members of the State Final Examination committees every year.

The Institute of Forensic Engineering also provides a wide scope for connecting students with practical experience, organising joint workshops and involving students in projects with companies in their field of practice.

At FME, they run the prestigious Professional Pilot bachelor's professional study programme, which is guaranteed by the Institute of Aviation, and during its teaching, its students meet a number of experts from their field.

The Centre of Sports Activities participates in the implementation of the Sports Technology study programme, where there are a number of contracts with the application sphere for the implementation of professional practice and experts participate in the teaching of compulsory and optional subjects.

FFA regularly cooperates with companies from the creative industry (especially in the field of gaming industry and

design) in the form of student internships and professional internships.

FIT organises the traditional ŽijemeIT conference, where partners present professional contributions in the areas of IT they deal with in the industry.

At FCE, the FCE Industrial Council, which ensures the inclusion of practical subjects and the involvement of expert practitioners in teaching, is discussing the intention to implement a study programme. At the same time, the faculty cooperates with the Czech Association of Civil Engineers and important institutions in the field of construction.

Each new study programme at BUT is subject to approval by the Scientific Council of the relevant faculty, while representatives of the internship are represented as external members of these scientific councils. External evaluators are a mandatory part of the subsequent discussion of the study programme in the BUT Internal Evaluation Council. Representatives of the commercial sphere also serve on study programme boards.

Each study programme is subject to periodic evaluation (at least once during the validity of the accreditation), and the programme guarantor must prepare an evaluation report. The involvement of practitioners will then be described in this evaluation report.

3.3 Other significant educational activities (apart from the implementation of accredited study programmes)

BUT offers education, for example, in the form of a university of the third age, where seniors are actively involved in courses such as Technology in a Nutshell, Take Good Pictures with a Mobile Phone, Chemistry in Everyday Life and Interesting Things in the Field of Hydraulic Engineering. The Institute of Lifelong Learning and a number of faculties and components offer lifelong learning courses. FFA and FA offer summer courses in drawing or sculpture for the general public; specifically in 2021, FA organised a summer course in drawing architectural perspectives, an international workshop called Re-FACT focused on industrial heritage and an international summer school in cooperation with European Humanities University.

FFA attracted students to its studios with, for example, afternoon courses in drawing, digital illustration or nude and figure drawings. Those interested could take part in the summer schools of sculpture, game creation, electronic music, painting, body design, and contemporary art.

For example, the Science & Technology Club, which has been working at FME for years, is trying to attract public interest in technology. Unfortunately, due to the pandemic, it was not possible to obtain selected foreign guests and some lectures moved to the online environment.

The Institute of Forensic Engineering organises the annual ExFoS (Expert Forensic Science) international conference of experts in technical and economic fields, the JuFoS (Junior Forensic Science) doctoral conference, and, in cooperation with TBU Zlín, participates in the organisation of the CrisCon (Crisis Management and Crisis Management) conference in Uherské Hradiště.

In December, FBM organised a workshop for foreign universities on the topic of branding, while also offering branding consultations for start-ups. Another FBM workshop focused on different approaches to the digitalisation of business models for the corporate sector.

FIT BUT organises the Summer Computer School for Girls, which is intended for high school students who have the opportunity to get acquainted with various areas of information technology and their latest trends. Furthermore, this Faculty of Informatics organises what are known as VGS-IT lectures with foreign experts. BISSIT International Summer School for foreign students annually presents current IT topics, in 2021 it was Cyber Security and Forensics, Machine Learning and Interactive Applications.

In June, the BUT Sports Activities Centre provided facilities for the UAS Technicum Wien summer school, thus becoming a co-organiser of the summer school with four foreign universities. Here, Austrian students measured the technical aspects of sports technologies, which they designed themselves, in their one-year projects.

The Juniorstav conference organised at FCE presents the most interesting doctoral theses, not only from FCE BUT, but also from other universities, and, thanks to its overlapping scope, it can also attract young researchers from other universities. In 2021, FCH also organised the science popularising student conference Chemistry is Life, the Industrial Forum, and the Chemistry and Life Forum.

4 Students

4.1 Measures applied to reduce academic failure

To reduce study failure, BUT is already taking steps in relation to potential applicants. All faculties try to carefully inform applicants about their study programmes and to acquaint them with what awaits during their studies, not only with detailed information on the website, but also at higher education fairs, campaigns directly at secondary schools and also on Open Door days. The information, often provided by BUT students, will enable applicants to choose the right study programme with regard to individual abilities and interests, which is the first prerequisite for future successful study. Due to the pandemic situation in 2021, a number of events took place online.

The individual faculties of BUT offer preparatory courses for entrance exams and also for first-year students before the beginning of teaching in the first semester. Preparatory courses are offered by practically all faculties of the Brno University of Technology. At FA they organise theTalentovky nanečisto, preparatory courses testing talent, which are of great interest. A preparatory talent testing course is also organised by FCE.

As a highly selective school, several times a year FFA allows those interested in studying to meet with the heads of individual studios, where it is possible to consult their own work and choose a suitable field of study. This is done in an organised open day (Enter FFA), but candidates are also invited by teachers for individual consultations throughout the academic year. FFA also organises targeted visits to selected secondary schools and organises a series of summer courses for those interested in studying. FFA is currently preparing new courses for the public within the framework of lifelong learning.

Sometimes it is also necessary to balance the initial knowledge of newly admitted students: grammar school students, whose share in some faculties is growing, usually have only marginal technical knowledge. On the contrary, they have a solid knowledge of mathematics and physics, which gives them an advantage in theoretical subjects. The situation is the opposite for technical graduates. At FEEC, first-year students have the opportunity to supplement any missing knowledge in optional seminars in mathematics, physics and electrical engineering. At FME, first-year students can also enrol in elective courses, such as Selected Chapters in Fundamentals of Design, Selected Chapters in Mathematics, Selected Chapters in Descriptive Geometry and Selected Chapters in Elasticity and Strength. FIT and FBM also organise a seminar on balancing knowledge of mathematics for students beginning their studies. At FCH, they organise preparatory and catch-up courses for students entering secondary schools. Specifically, they are a Preparatory Course for the Study of Chemistry, Repetition of the Basics of Secondary School Chemistry and Repetition of the Basics of Secondary School Mathematics. At FCE, they regularly organise Spring Preparatory Courses in Mathematics and Physics and a Summer Technical School for their future students. In 2021, based on the demand of first-year students, the Centre for Sports Activities introduced a new course, Measurement in Sport.

Teachers in master's follow-up study programmes also face uneven initial knowledge of students, e.g. at the Institute of Forensic Engineering, where graduates of bachelor's degree programmes come from various universities, they have compiled first-year subjects in the accreditation of new study programmes so as to balance students' competencies, especially in the field of technical, economic and legal knowledge. Pedagogical advisors for the given master's follow-up study programmes help students deal with problems during their studies, consult with students on applications for adjusted attendance, help with the choice of elective and free subjects, and participate in the processing of final theses so that the course of study is smooth. An introductory lecture containing information about the studies, rules and regulations, including requirements for successful study, is always organised for first-year students.

At FME, first-year students can address their problems to the senior students known as ambassadors, who help their classmates solve potential and actual problems with their studies. At FIT, they have study advisors, FIT staff who advise students on how to comply with all the rules for smooth study, and thus prevent some students from dropping out of school due to ignorance of regulations and rules. The institute of study advisors was also established at FCH, where every institute has its own advisor. At the FA and FCE, they organise an introductory lecture for first-year students, where they acquaint them with the most important rules of study.

The Alfons Counselling Centre, where students can benefit from individual consultations, also helps to identify causes of academic failure. In addition, Alfons offers the possibility of further development in the case of specific student needs, for example, the EEG Biofeedback device helps students increase their ability to concentrate, which can have a positive effect on their studies. Special care is then given to students with special needs, who are provided with various services so that they too can successfully complete their studies.

The Student Chamber of the BUT Academic Senate has prepared a Freshman's Handbook for new students this year, which is available online at www.prirucka.vut.cz First-year students will find a lot of information here that can make it easier for them to start and progress in their studies at BUT.

4.2 Final decisions on the declaration of the invalidity of the performance of the state examination or its part or the defence of the dissertation

No such proceedings took place at BUT in 2021.

4.3 Measures applied to limit the extension of studies

One of the significant negative motivations remains the threat of fees associated with exceeding the standard study period by one year. The study departments of all parts of BUT try to inform students as much as possible about the conditions of the fee obligation from the very beginning of their studies, so that they can adapt their study strategy in time and avoid the potential threat of fees. While the fee for exceeding the standard period of study by one year increased, it is relatively low; if someone is studying even longer, it is a significant financial amount. For students who are extending their studies due to difficulties caused by the coronavirus pandemic, the assessed fees may be reduced on appeal, which occurred in specific cases in 2021.

At the faculties, they also provide students with advice on the organisation of studies in specific study programmes, so that there is no extension of studies. In 2021, when the course of the study of many students, especially in recent years, could be negatively affected by the coronavirus pandemic, the faculties tried to create conditions for students to manage to complete their studies properly and on time, despite these difficulties. In the summer semester of the academic year 2020/2021, the deadlines for submitting final theses and the deadlines for state final exams were often postponed so that students could complete their final theses and not have to extend their studies for a whole year. The state exams took place during the summer holidays and the autumn months of 2021.

In 2021, BUT faculties and departments also tried to make it easier for their students to cope with the difficulties associated with entering university, which often deepened in pandemic situations. Preparatory courses are very useful in this, helping students to bridge the transition from high school to university, so that they have a higher chance of successfully completing their studies within the set time. (See the previous Chapter 4.1.) In the winter semester in 2021, teaching was already more or less in its standard full-time form, i.e. students of (not only) first years did not have to deal with problems associated with distance learning. Nevertheless, required quarantines and isolation could have affected incoming students, and BUT tried to deal with these specific problems so that all students had a chance to progress successfully, e.g. at FBM, the examination period of the winter semester 2020/2021 was extended until the end of February 2021 in order to help first-year students, while at the same time they were able to take advantage of the extended examination period (14 days in June), when they can take exams for both winter and summer semesters.

At some faculties, they also allow students to enrol in courses more flexibly so that they can plan their studies better and, for example, when repeating a course, simultaneously study subjects from the next year, so as not to unnecessarily prolong their studies.

At the beginning of 2021, the examination period of the winter semester of the academic year 2020/2021 at the Institute of Forensic Engineering was extended from the original 5 weeks to 8 weeks to give students the opportunity to gain credits and pass exams in time, taking into account distance learning, completion of laboratory exercises and seminars.

At FIT, the most common reason for extending studies is the simultaneous employment of students. Because students most often work in the field they are currently studying, the faculty tries to work directly with companies on a system of student internships, which, compared to traditional employment, will allow students to better fulfil their study obligations. They also face the same problem in the follow-up master's degree programme at FBM. Here, too, they try to cooperate with companies in organising the study of their students.

4.4 Own and specific scholarship programmes

In 2021, as in previous years, the 500 best graduates, who became first-year students at any BUT faculty, received extraordinary financial support. This is a one-off contribution to motivate applicants.

At most faculties, merit scholarships are paid, which are intended for excellent students according to the achieved study average and the number of obtained credits. At some faculties, they support gifted students in the first year with an extraordinary scholarship, where they take into account the study results in the first semester of study (e.g. FCE and FBM).

At all faculties, students can receive a scholarship if they engage in scientific or creative activities beyond the standard study obligations. Students are rewarded with the Dean's Award or the Rector's Award for extraordinary study or creative performances. The BUT scholarship also supports important school representatives in sports. The specific conditions for obtaining these scholarships are set by the Sport project at BUT; in 2021, 217 such scholarships were paid out. BUT is also involved in the UNIS Ministry of Education scholarship programme for students with exceptional sports performance. In 2021, following a selection procedure, 30 students were enrolled in the Victoria University Sports Centre and received financial support.

Faculties also support their active students in the form of one-off special scholarships for representing the school in the field of science or other creative activities, e.g. at FA, they regularly award scholarships for the excellent work of their students, who have also established themselves outside BUT.

At FIT, they have decided to motivate outstanding doctoral students to devote themselves fully to their studies without at the same time having to work outside the university, in the form of extraordinary scholarships that match the doctoral student's income to the average salary. At FCH and other faculties, they also seek to support doctoral students with motivational scholarships for research and publication results.

FFA also has several support scholarship programmes in the form of the following scholarship programmes: Support for the Completion of Diploma Thesis, Support for Artistic and Creative Activities of Students, Support for Artistic Activities of Doctoral Students, Dean's Award for Diploma and Bachelor Thesis, Scholarship for Loan of Works of Art (Artotheque).

The Rector of the University may award an extraordinary social scholarship to a student in the event of a sudden deteriorating social situation. The purpose of this one-off scholarship is to help bridge the unfavourable period and thus increase the chances of successfully continuing your studies. Students of FFA, FA and FCE can also receive an extraordinary social scholarship separately at their faculty.

In 2021, BUT financially supported students whose families were severely affected by a tornado in southern Moravia in June of that year. Students with permanent residence in the affected municipalities were approached by the BUT management and subsequently those of them who were severely affected by this disaster received an extraordinary scholarship to pay for the destroyed study aids and personal belongings.

In 2021, a scholarship was also awarded to students who, in an extraordinary way beyond their study obligations, participated in the management of the coronavirus pandemic, representing their school in civil society with dignity.

The BUT Academic Senate Student Chamber also offers active students the opportunity to obtain funding for their ideas through the BUT Internal Student Support Fund. The projects are assessed by a committee, which can set aside several tens of thousands of crowns for selected student activities.

4.5 Counselling services provided to students and their scope

There are two psychologists at the BUT Institute of Lifelong Learning. They provide professional psychological help to BUT students who want to solve their problems, find themselves in a difficult life situation, or want to better orient themselves and try to develop their personality and abilities.

ILL BUT provides the following individual consulting services:
- Psychological counselling for up to 7 free sessions
- Career counselling
- Coaching
- Development of a professional-personality profile (counselling using psychodiagnostic methods)

In 2021, a total of 428 consultations were provided, most of which (394) were psychological consultations. Students also have the opportunity to use online psychological counselling (in the form of written text). 12 students took advantage of this opportunity in that year. Psychological counselling

helps students in solving problems that can be difficult life situations, relationship problems, study problems, etc.

Career counselling helps to address career choices, career planning and management. This category of counselling also includes addressing internal barriers to career choices and job search assistance. Students often use the option of compiling a professional CV or coaching.

Development and preparation courses are group activities focused on the development of soft skills. The courses have been extended to include topics related to the prevention of study failure in the first years of study and the development of competencies needed to successfully complete studies in higher years. The courses take place interactively in smaller groups (8–15 participants) and have different time allocations.

4.6 Support for students with special needs and their identification

The Alfons Counselling Centre is a part of ILL BUT. Its task is to provide counselling and support services to applicants and students with special needs. By specific needs (hereinafter referred to as SN) we mean specific learning disabilities, physical and sensory disabilities, chronic somatic diseases, autism spectrum disorders, mental illnesses or impaired communication skills.

Basic support for students with SN:

- Adaptation of the admission procedure – this is a change/modification of the admission procedure so that students with SN can prove their skills and knowledge in the same way as other students. Identification takes place when filling out the e-application, where the applicant indicates their specific needs. Subsequently, they are asked by an Alfons employee to provide admissible documents (necessary to assess the impact of disadvantage on the admission procedure). Students apply for adaptation directly by contacting Alfons or they are recommended to do so by the study department or vice-deans for study matters, and they are regularly informed about activities and support opportunities on the centre's website and on social networks.

- Adaptation of study – this is a change/modification of the study regime so that students with SN can acquire and prove their skills and knowledge in the same way as other students. The adaptation itself then takes the form of proposed direct measures. For example, increasing the time allowance for exams, providing study materials, interpreting into Czech sign language, increased assignments, permitting hygienic breaks, transcription service, etc. Alfons has recently expanded its services with the possibility of providing content transcriptions of teaching. Content transcription is intended for students who have difficulty writing notes. The centre also offers personal assistance, software rental and additional English language instruction. There has recently been an extension to conversation and online teaching, proofreading of final theses and Czech/English language counselling.

- S-compass – social and legal counselling.

- EEG-biofeedback therapy – a modern method that allows you to control your own brain waves. It is the self-learning of the brain using what is termed biological feedback. It alleviates a number of difficulties, including learning and attention disorders, sleep and speech disorders, anxiety or depression.

- SunBall – is a certified rehabilitation facility using biofeedback and visual feedback. It is a system of interactive exercise balls that help with the development of cognitive functions and physical abilities. Through the game, it develops attention, visual-motor coordination and fine motor skills and is therefore extremely suitable for working with students with specific learning disabilities, attention deficit hyperactivity disorder (ADHD), autism spectrum disorder, and for students with post-traumatic conditions.

4.7 Support and work with exceptionally gifted students and those interested in studying

The faculties of the Brno University of Technology can offer extraordinary scholarships to gifted students, and they can also nominate them for the Dean's Award or the Rector's Award. Some corporate partners also donate some funds to reward exceptionally gifted students. Another option is to participate in established external competitions (e.g. the Josef Hlávka Award, Werner von Siemens Award or Brno Ph.D. Talent), which reward talented students. Among the internal

competitions, we can mention, for example, the presentation competition 8 from BUT, which BUT organises every year and which features the eight best graduates of bachelor's degree programmes, who measure their strengths in rhetoric and promotion of their bachelor's thesis.

At FFA, the teacher obtains information about the extraordinary talent of the person interested in studying even before the very beginning of the admission procedure, usually by contacting them and discussing their wishes regarding studies and artistic intentions. After admission to study after successfully passing a two-phase talent exam, such a student is provided supervision in a specific studio.

At FIT, exceptionally gifted applicants are supported by preferential admission based on excellent results in prestigious competitions and, as students, are further encouraged to engage in research in the form of project internships. At FBM, gifted students are given individual space to participate in the professional activities of the faculty – for example, in the role of auxiliary or within the programme to support the development of student start-ups, especially on professional study programmes. Another form is a programme of consultations on students' individual business projects.

At the Institute of Forensic Engineering, they also try to involve exceptionally gifted students in their research projects and also motivate them to pursue doctoral studies.

As for applicants, here the 500 best domestic graduates are rewarded with a lump sum of CZK 6,000 according to their graduation results. The algorithm is set so that students who choose mathematics and English in the compulsory part of the school graduation exam will receive the bonus. Those who choose a more demanding version of the Mathematics + exam in the optional section also have an advantage.

Applicants are also worked with at the secondary school level or through competitions (e.g. STAVOKS at FCE, Business Point at FBM, Merkur PerFEKT Challenge at FEEC or Roboti@ FSI at FME). Selected applicants from secondary schools can also try their hand at working at the CEITEC BUT Science Centre thanks to the CEITEC Student Talent project, where the best will start as members of renowned scientific teams.

In addition to working in student organisations (e.g. BEST Brno, IAESTE, ESN BUT Brno), active students can also find employment in specific scientific projects run at their home institutes. Doctoral students are usually involved in specific research, participate in foreign conferences, etc.

Students at FFA can then get the opportunity to invite the teacher to host external exhibition projects, or get a residence offered by partner institutions, through which the student will receive accommodation, their own studio, financial support and the opportunity to organise an exhibition in the gallery in order to be able to fully focus solely on their artwork. Since 2021, there has been the possibility of an annual free studio in the Kraví hora area. Also since 2021, a part of the Dean's Award of the FFA for faculty graduates has been the possibility of a monthly art residency in Nová Perla in Vraná nad Vltavou.

4.8 Support for students with socio-economic disadvantages and their identification

The university does not have its own tool for identifying students with socio-economic disadvantages. However, these students can apply for a social scholarship for themselves, for example. In 2021, a one-off scholarship was also paid to applicants from tornado-affected areas in South Moravia (e.g. for the re-acquisition of study tools and aids).

The S-Kompas counselling centre within the BUT ILL, where people can find help, especially in the legal and social fields, is available to both BUT students and employees. Support is provided by e-mail, telephone or in person. S-Kompas services are connected with other state and non-profit entities and help students receive the help and support to which they are entitled.

4.9 Support for student parents

Each student-parent can apply for an individual study plan at their faculty. This applies especially to mothers at the time when they would otherwise take maternity leave. These students can also request a postponement of the review of the fulfilment of study obligations in the period around their due date, e.g. at FA, doctoral students who have young children can replace an internship abroad with another form of international activity. At the Institute of Forensic Engineering, both parents of a child under the age of three can apply for individual adjustment of the attendance obligation in subjects where participation is necessary. At FME, they also allow student parents to take exams outside the exam period, and they allow various individual plans.

FFA caters to student parents as much as possible by enabling them to fulfil their study obligations in extraordinary terms and during the entire academic year, or over multiple years. Some studios have even adapted the equipment of the studio to such an extent that student mothers can bring their young children to the studio and devote themselves to artistic creation.

Students who are parents of a child under the age of three may interrupt their studies. The Dean will always comply with such requests, and the period of interruption due to parenthood does not count towards the maximum period of study. The time when a student studies in the legally defined "recognised period of parenthood" does not count toward the total period of study, from which the so-called fee obligation is later calculated. At FCH, parent students can apply for financial support in the form of a scholarship.

The Edisonka mini-school has also been operating at BUT for seven years. It is located in the FEEC complex, but is intended for children of employees of all faculties of BUT. It is not a classic nursery school, but provides a regular babysitting service in the form of a children's corner, for children under 6 years of age. At FCH, a room was set aside as a rest area for student parents who take turns caring for their child between the individual teaching blocks. Some women's toilets at BUT are also equipped with changing tables.

5 Graduates

5.1 Cooperation and contact with graduates

Every year, BUT expands its database of electronic contacts to graduates (at the end of 2021 there were more than 24,000). The Brno University of Technology presents its successful graduates mainly through articles (zero to hero type) on the website for graduates and at www.zVUT.cz. During the year 2021, almost thirty articles were published. They are also popular on social networks, the strongest of which is LinkedIn (more than 50,000 registered users).

During the year, four issues of the newsletter for VUTARIUM graduates were published including interesting articles, interviews, invitations and information about current events at BUT. The original distribution of e-mail messages with a link to VUTARIUM in the PDF file was replaced by a new e-mailing in HTML code. For the first time ever, two special editions of VUTARIA in English for foreign graduates have also been published.

Cooperation with graduates at the professional level was expanded within the Mentoring Programme through the BUT Career Centre (workshops, courses and training). Unfortunately, the active involvement of graduates in school events, for example in the form of participation in events such as the Golden Graduation, was not possible due to the epidemic situation in the Czech Republic. However, an event commemorating 50 years since graduation was able to take place in 2022.

In 2021, BUT became part of the group of Graduate Centres in the Czech Republic under the auspices of the University of Economics in Prague, with the aim of sharing current needs, know-how, data, surveys and "best practices" in working with graduates.

5.2 Monitoring the employment of graduates, measures to increase it, own surveys and reflection of results in the content of study programmes

At the end of 2021, after two years, graduates of follow-up master's programmes were again addressed in the regular survey, this time by those who completed their studies in 2019 and 2020. Although some of them were graduates entering the labour market during the pandemic (almost 800 responses), 93% of them had a job within 3 months of graduation; 67% before graduation, practically the same as in the previous survey. In addition, the average starting salary has risen by more than 4,000 crowns since the last survey, i.e. by approximately 13%.

Nevertheless, a minority of respondents admit that the coronavirus situation has had or is having a negative impact on their employment, especially on subjectively slower salary growth than they would expect. On average, however, current salaries also rose significantly, by more than 5,000 crowns compared to the previous survey. At the same time, some respondents did not perceive the impact of the pandemic negatively, but on the contrary, it manifested itself in the form of faster career growth, more work in the field in which they work; more graduates also praised the possibility of working from home. If they could go back in time, 88% of the surveyed graduates said they would choose BUT for their studies again.

BUT regularly monitors the employment of its graduates through questionnaire surveys to find out how the university was able to prepare them for internships. In addition to graduates, the school also receives feedback from representatives of key companies which employ graduates. Representatives of these companies can also actively intervene in the structure of study programmes, consult diploma theses, and often participate in teaching. They are raising the next generation of successful representatives of their companies. The results of the graduate surveys, which are repeated chronologically every two years, can be found at www.vut.cz/absolventi/uplatneni.

5.3 Cooperation with future students' employers

The BUT Career Centre (hereinafter referred to as the CC) located in the FBM building is dedicated to cooperation with future student employers at the university level. It offers students development programmes in the field of career development and entrepreneurship. The offer to partners is divided into several programmes. The goal of the BUT Career

Centre is also to mediate cooperation between the practice and individual workplaces of the university.

After personnel changes and evaluation of the developments so far, four programmes of cooperation with future employers of students were set up, which reflect the current developments in society with regard to the ongoing pandemic. Students and partners have long been interested in organising events in the online environment and in the availability of information online in general.

The basic pillar of the offer to partners is the programme of paid advertising of job offers on the CC website and social networks, followed by free publication of paid and unpaid student internships. In the calendar year 2021, CC published 231 job offers or internships on its website, which is almost two times higher than in the previous year and almost three times higher than in 2019. An increase in interest among employers can be expected in the following year as well. It was supported by the introduction of discounted prepaid advertisement packages and the modification of the appearance of advertisements. Offers can now include interactive elements, such as an embedded location map, videos and other multimedia, an infobox with employer information, or a contact form. In the future, the growth of interest in advertising at CC will be further stimulated by a planned loyalty programme.

A partnership programme is prepared for partners who want to work more closely with CC, enabling the creation of an employer profile or the organisation of an event for students. The employer's profile is linked to the offers of internships or job opportunities as well as to the offer of events organised by the employer or in cooperation with them. In cooperation with CC, the partners organise various events for students. In 2021, several educational webinars with partners took place, and in 2022, for example, mock interviews are being prepared. The offer expands the possibility of organising a discussion with students or publishing an article drawing attention to internships or recruitment events with the employer.

Companies have another opportunity to get involved in the training of future employees thanks to the mentoring programme. Employees of cooperating companies can become mentors of students in the preparation of student projects or final theses. CC is currently preparing a database of mentors.

Last but not least, cooperating companies have the opportunity to participate in a benefits programme, thanks to which they can present themselves to students or publish free job offers in exchange for an offer of benefits for BUT students, with a focus on students starting their own business. Therefore, the Career Centre has conducted and continues to conduct negotiations with partners from practice, who can offer students, for example, a discount on the use of coworking, payment gateways or accounting software.

The Career Centre also seeks to deepen cooperation with the public sector and institutions in the region, including the JIC (South Moravian Innovation Centre), JCMM (South Moravian Centre for International Mobility) and the Skillcentrum of the Centre for Foreigners of the South Moravian Region. One of the goals for the coming year is to create a career guide, which will help students orientate themselves in the offer of development services in the region and facilitate cooperation with entities operating in a similar area to CC. In a similar way, CC strives to deepen cooperation with student associations operating at BUT.

CC has long been striving to strengthen cooperation with individual faculties and parts of BUT. Thanks to this, the concept of a unified portal of cooperation between BUT and practice was created in 2021, which would simplify the orientation of partners and strengthen the position of the BUT brand. In addition to offering opportunities for cooperation with BUT workplaces, the portal would also offer a unified calendar of events held in cooperation with partners across BUT.

In the area of student services, CC offers activities and information resources in two areas: career development and entrepreneurship development. In both areas, CC organises educational lectures, seminars and workshops and provides consultations to students. As in previous years, the topics of educational events were selected with regard to the results of questionnaires for students. The activities are complemented by the publication of articles on the CC website, a long-term offer of eBooks, and also educational contributions on social networks. The career development library has become popular with students. CC currently offers more than 25 titles recommended by career counsellors for distance borrowing.

Thanks to the interest of students, 1,868 places were filled in 2921 lectures, seminars and workshops in 2021. CC also provided 142 consulting services, consisting mainly of CV consultations, individual career consultations and work potential diagnostics. Several consultations were conducted in English thanks to the request of foreign language students. Legal advice, also provided in English, contributes to the development of entrepreneurship.

The CC website was also prepared for the implementation of the English version in 2021. The CC materials for partners and students, whose graphic design respects the uniform visual style of BUT, have also undergone modifications. The same is true for all graphic content shared on social networks and the CC website.

The year 2021 confirmed the long-term interest in CC services at the university among students and the growing interest from future employers. The BUT Career Centre is one of the largest domestic CCs operating at universities in terms of the number of students served.

6 Interest in studying

6.1 Nature of entrance examinations

The entrance exams are held by individual BUT faculties, unless they use the services of Scio, which regularly organises National Comparative Exams. Otherwise, the entrance exams consist mostly of high school mathematics and physics, but in some faculties biology or computer science are also included, it always depends on the specific study programme. At the FBM, the entrance exam is also in English.

At most faculties, there is an extensive system of possibilities for waiving entrance exams, based on achievement, participation in various competitions (especially in high school professional activities, various Olympics, etc.). For example, at FIT, they try to find active candidates who are already involved in activities in high school in addition to their study duties. FA, FFA and the architectural study programmes within FCE have a talent component in the entrance exam. FEEC also has a talent exam for the study programme Audio Engineering and FME has one for the programme Industrial Design in Mechanical Engineering.

In 2021, the entrance exams at the faculties and parts of BUT were organised with regard to the current pandemic situation. For example, talent tests took place at the FA in the form of distance learning. Faculty staff managed to organise the exams under these difficult conditions so that they would fulfil their purpose, and managed to select the most talented applicants for studies.

As part of its specification and maintenance of a high level of selectivity, FFA always manages the entire admission procedure with its own resources and did not abandon this even during the deteriorating epidemiological situation. Following consultations with the Legal Department and treatment in internal standards, the conditions for the admission procedure were adapted to meet the requirements of current government regulations.

In the study programmes conducted in the English language, the entrance examinations are most often in the form of oral interviews and the motivation to study and the language readiness of the applicants are also assessed. The entrance examinations for doctoral study programmes have a specific character, being carried out in the form of a professional discussion on the intended topic of the dissertation, in order to verify not only the necessary knowledge, but also the applicant's readiness for the following scientific work.

6.2 Cooperation with secondary schools

Based on the relevance of their focus, catchment area, achieved results of graduates, etc., BUT offers selected secondary schools a visit with a presentation within the BUT roadshow. An employee of the marketing department, along with students of the relevant faculties, will then travel to all high schools that show interest. They make a presentation of the university, its faculties and departments, and study opportunities at BUT to potential applicants and answer their questions, as well as giving out promotional materials. In the last two years, the presentations have been partially implemented in a modified form in the online environment (MS Teams, Google Meet, Zoom, etc.).

Due to the epidemiological situation, this year it wasn't possible to hold the traditional meeting with principals from secondary schools which provide most applicants to BUT. BUT also regularly evaluates schools from which the best students head to the Brno University of Technology, based on their graduation results and evaluation in the TOP500 programme, with a financial contribution for the best graduates from domestic schools.

This year, the magazine for applicants, which BUT traditionally distributes, for example, at the Gaudeamus trade fair, was also given out at the International Engineering Fair, which was attended by a large number of high school students in 2021. It received a great response. Although IEF has a different target group, this year was also an opportunity to recruit candidates.

In 2021, BUT participated in both the new and traditional forms of the post-secondary education fair Gaudeamus. During March, the university introduced itself to applicants through a stream called the Online Faculty, which was intended primarily for Czech and Slovak high school students and motivated them to apply before the deadline. In November, the BUT exhibition stand was already a traditional part of the largest post-secondary education fair in the country. BUT also supports communication with visitors to the Gaudeamus Brno Fair by participating in accompanying programmes. Student presentations and Science for Life supplement information about the admissions process, programmes, faculties, departments, and facilities of the university.

Also this year, BUT was one of the main partners of the FabLab Experience truck, which made 10 trips to high schools and also presented BUT at another 3 events. During the trips, high school students could try a workshop full of 3D printing, milling machines and even an electron microscope. The workshops are prepared according to the focus of the given high school. Other scheduled trips were cancelled due to the coronavirus pandemic.

The individual faculties also have close cooperation with secondary schools according to their focus. For example, FCE cooperates with secondary industrial schools, FBM with business academies. For example, in 2021 FME organised the traditional Robots@FSI competition. The Business Point competition organised at FBM gives high school teams the opportunity to work on a specific case study in the field of economics, management or marketing.

In the summer, at a time of loosened restrictions, the (F)IT Summer School for Girls, which has been organised by FIT for 15 years, was successfully held. Here, the event is divided into two runs according to age, so in addition to high school girls, students from primary schools can also enrol in the IT summer school. Due to the epidemiological situation, the BUT Junior Technical University of Technology did not take place. However, it should take place again in the academic year 2022/2023.

7 Employees

7.1 Career Code for academic staff and motivators for employee remuneration

Ensuring motivation for work performance and continuous development of employees is the basis of the quality of human resources of every organisation. As part of its personnel strategy, BUT is preparing the creation of career rules to support the career development of employees.

There has been a particular shift in the area of employee evaluation. In 2021, after the verification operation, the Academic Staff Evaluation System (SHAP) was launched. SHAP records relevant information on employee performance and further processes and evaluates it as a basis for the manager and the employee to manage their personal development.

Professional breaks for employees and other longer-term types of absences affect the professional development of employees, but the evaluation system reflects longer-term developments. Nevertheless, especially in personal interviews, these adverse effects are taken into account and corrected. As part of the analysis of equal opportunities, which was carried out at BUT in 2021, increased support will be given to this group of employees so that any break has the least possible impact on their career development.

7.2 Development of pedagogical skills of the academic staff

The development of pedagogical skills of academic staff is carried out at the university through the Institute of Lifelong Learning. It offers presentation and communication skills courses designed mainly for the academic staff.

With the development of distance education, the support of academic staff in the creation of teaching educational materials, which is provided through the Centre for Computer and Information Services, has expanded. Due to pandemic measures, apart from online education, the possibilities of education abroad were partially limited.

7.3 Gender equality

In 2021, the university carried out a gender audit called the analysis of equal opportunities, on the basis of which the BUT Gender Equality Plan was prepared for the period of 2022 to 2024. The audit was carried out by the non-profit organisation Gender Studies, o.p.s. The aim of the audit was to verify the way in which the university reflects the standards in the field of equal opportunities adopted by the Czech government, and to obtain a basis for the elaboration of a gender equality plan. The equal opportunities plan is an integral part of the university's human resources management strategy.

7.4 Issues of sexual and gender-based harassment

As part of the gender audit (analysis of equal opportunities), the issue of prevention and resolution of stimuli for negative manifestations of behaviour at BUT, which could have the character of discriminatory or otherwise morally unacceptable behaviour, was also addressed. The current solution system is not explicitly set up in this sense, and its effectiveness cannot be assessed. One of the goals of the gender equality plan should be to explicitly set up and implement a transparent system of solutions with the declaration of any unacceptable forms of harassment, bullying, etc., regardless of the role or function of the person concerned. For the same reason, BUT has joined CRP (Centralised development projects) 18+ Social Security at Czech universities in the context of academic ethics, which will address this issue.

8 Internationalisation

8.1 Support for student participation in foreign mobility programmes

BUT actively supports and tries to motivate students and employees to go abroad for a study stay, internship or summer school. It perceives that this is an indispensable experience for students in the labour market. During their stay abroad, students will gain not only study experience, but also valuable life experience that they would not gain from only studying in the Czech Republic. In the same way, employees gain invaluable experiences that they can apply in their agenda and academic or other activities at BUT. Due to the situation caused by COVID-19, BUT promotes new types of mobility, such as virtual or blended (hybrid) mobility. The aim is for students and staff to gain foreign experience despite the crisis, albeit only indirectly through online tools. Another benefit of these types of mobility is the fact that students who already work or have families, for whom physically participating would be difficult, can also take part in a stay abroad.

To motivate students to go abroad, the BUT Foreign Relations Department (hereinafter referred to as FRD) regularly organises events such as Move'in Europe or International Mobility Day. In 2021, only the International Mobility Day was organised online. FRD organises live sessions, where BUT students who have participated in a study stay/internship/summer school abroad shared their experiences via live broadcast on Facebook. This format proved to be very beneficial because it appealed to a large number of students, not only during the broadcast, but also after the recording. The network of ambassadors has also been operating since 2020, in which BUT students with foreign experience are active. This network helps to create important information channels for students.

Mobility abroad takes place primarily through the Erasmus + programme. Other no less important programmes, the popularity of which are growing include the foreign educational programmes CEEPUS, AKTION, scholarships of the Academic Information Agency and others. Free Mover mobility is also very popular among students. This is about student mobility all over the world, where the stay is mainly financed from institutional development projects of the Ministry of Education. Also interesting and beneficial are the mobility through IAESTE (International Association of Students of Technical Experience) and BEST (Board of European Students of Technology), which allow technical school students to gain experience through internships and summer schools around the world.

In addition to the above-mentioned promotional activities, among other tools for the promotion of studies and internships abroad are classic tools such as websites, Facebook and Instagram. A monthly Newsletter is also published in electronic form. In the Newsletter, students will find current or upcoming dates for submitting applications for trips abroad, as well as information on events and activities of international student associations.

BUT is the coordinator of the Study in Brno project. This project is primarily focused on the promotion abroad of the study fields of BUT and its partners (Masaryk and Mendel University), and of the Brno region. BUT greatly appreciates cooperation with Brno universities. The Study in Brno project has shown that studying at the Brno University of Technology is very attractive for foreign students. Proof of this is the fact that 25% of foreign students who applied to study in English learned about BUT's study programmes thanks to the Study in Brno project. In 2022, Study in Brno will also want to focus on attracting foreign researchers to Brno universities.

Another form of attracting foreign students to study or for an internship at BUT is the representation of the school on foreign study portals, and at education and career fairs (in 2021 only online). FRD also actively communicates with another network of ambassadors, which was established in 2019 from foreign students studying at BUT.

BUT actively participates in foreign trade fairs, where it promotes its courses and opportunities for cooperation in general to foreign students and employees. It is also looking for opportunities at foreign universities in which BUT students, employees, scientists and researchers can gain experience abroad. Due to the situation caused by the COVID-19 pandemic, in 2021 the trade fairs were held only in online form. FRD participated in only one professional fair EAIE (European Association for International Education).

To obtain foreign self-payers, BUT has actively participated in the Study in the Czech Republic platform, which promotes the university's study programmes to potential foreign students. This activity is managed by the House of Foreign Cooperation. BUT also cooperates with the South Moravian Centre for International Mobility (JCMM), which facilitates foreign students studying at BUT in the Czech language. It also offers scholarships for certain fields for foreign students studying in English programmes. Part of the cooperation with JCMM is also the implementation of the SoMoPro project, thanks to which BUT is gaining top scientists. Unfortunately, in 2021 this cooperation was not implemented.

BUT also uses the aforementioned Study in Brno project and other foreign study portals to promote its study opportunities abroad to foreign self-payers. For foreign students, every year OZV organises a Welcome Week before the beginning of each semester. The aim is to acquaint foreign students with the environment of BUT, to inform them about local customs, and to prepare them for possible cultural differences. Last but not least, foreign students will be able

to complete the necessary formalities for studying and staying in the Czech Republic. In the summer semester of the academic year 2021/2022, the Welcome Week was held in physical form under strictly determined hygienic conditions.

BUT is committed to the constant improvement of conditions for the recognition of subjects that students have completed during their stays abroad. The Rector's directive, which sets the recognition of subjects completed abroad, is used for this purpose. In general, there is an effort to ensure that students do not extend their studies, but complete them on time despite the time spent abroad.

FRD continuously implements its goal of reducing the administrative burden in the form of electronic agenda in handling mobility abroad, both for students, employees and for faculties/components. FRD is actively preparing to participate in the Erasmus Without Papers initiative – one of the main goals of the European Committee.

8.2 Support for foreign mobility of employees

FRD organises the annual International Staff Week, which is intended for colleagues from foreign universities, and in which the main topic is the internationalisation of university studies. Thanks to this event, experiences and good practices in this area are shared. We also succeed in deepening or establishing further cooperation between BUT and foreign universities. In 2021, the International Staff Week was able to be held on a full-time basis under strict hygienic conditions. In the future, BUT would like to organise more staff weeks at faculties and departments during the year, focussing on different themes.

BUT is also involved in the call of the OP RDE International Mobility of Researchers I and II. This format significantly helps to stimulate the bilateral mobility of researchers from BUT abroad and vice versa. This activity greatly helps to gain foreign experience, which is valuable for BUT. Since 2020, in addition to scientific mobilities, mobilities for administrative staff have also been implemented. There is a lot of interest in this type of mobility.

8.3 Integration of foreign members of the academic community

The integration of foreign members of the academic community into the life of the university is one of BUT's priorities in the field of internationalisation. Due to the fact that BUT has considerable scientific and research potential within research centres, there is a growing interest in recruiting foreign academic and research staff at BUT.

As already mentioned, one form of support for the mobility of researchers is the OP RDE project International Mobility of Researchers or the SoMoPro project. One of the activities for the successful integration of foreign scientists, researchers and academic staff is the functioning Welcome Service, which has been offering its services centrally at BUT since 2019. The services within the Welcome Service are provided by FRD in cooperation with colleagues from faculties and departments. It is important for BUT that foreign colleagues feel "at home" at BUT. The Welcome Service provides services and information not only before the arrival of a foreign employee, but also during their stay. Services and information are also provided to family members of foreign employees, who very often accompany them. An information video was created in 2021 as a form of promotion, informing potential foreign workers how they will be cared for at BUT.

As part of the implementation of the central Welcome Service, BUT works closely with the South Moravian Regional Centre to support the integration of foreigners and EURAXESS. The Brno University of Technology perceives that a very important aspect of internationalisation is the recruitment of visiting academics to work at BUT. The aim of the university is the smooth and active inclusion of foreign members in the academic community.

8.4 Activities strengthening internationalisation

BUT is a member of international organisations such as the European University Association (EUA), the European Association for International Education (EAIE) and the university network of technical universities CESAER (Conference of European School of Advance Engineering, Education and Research) .

BUT is interested in participating in the Erasmus + European University Initiative project. BUT is currently working with eight other European universities on the submission of a project application under this initiative, with the grant application to be submitted in March 2022. If the European alliance does not receive an EU grant, the alliance partners are considering creating a university network to help boost the mobility of students and academics and cooperation in study and science and research, and to increase the chances of successfully winning EU projects.

Based on the monitoring of internationalisation, which was carried out by the House of International Cooperation with the help of four foreign experts, BUT created an Action Plan for Internationalisation for the period of 2021 to 2023, with 2021 primarily focused on analysing the state of internationalisation at the Brno University of Technology.

9 Research, development, artistic and other creative activities

9.1 Strengthening the link between creative and educational activities

The aim of academic and research staff at BUT is to participate in research that will lead to new important findings and in research that will have a high application potential. One of the tools to achieve this goal is to participate in the solution of prestigious international and national projects of basic research, applied research or collaborative and contractual cooperation with industrial partners. The results from creative activities are quickly incorporated into lectures, exercises and seminars for students of all accredited fields.

Each faculty has exclusive research directions in the creative activities linked to the projects they are working on, directly involving students in their solution and thus innovating individual forms of teaching. The direct connection of the results of all forms of creative activity with teaching enables future BUT graduates to obtain adequate education with a high potential for employment on the international labour market, in practically all areas of advanced technology. BUT faculties and departments cooperate significantly with companies, which, among other things, enable their participation in teaching in the form of lectures, short seminars or full-time workshops. Students thus have the opportunity to obtain the most up-to-date information from practice, including information on research topics for which there is the greatest social demand.

9.2 Involvement of bachelor's and follow-up master's degree students in creative activities

All students of bachelor's, and especially master's and doctoral study programmes are involved in creative activities within the work on their bachelor's, diploma or dissertation work and can also be involved in research, development and artistic projects of all types at individual faculties and departments of BUT.

Students of follow-up master's and doctoral programmes have the opportunity to apply to the Student Grant Competition within the framework of specific university research at BUT. This competition emphasises the strengthening of students' independent creative activity in cooperation with academic staff in the field of research and development. The projects enable intensive involvement of students in the issues addressed, especially in team research and development activities at faculties and departments. The grants, awarded annually as part of student-specific research, contribute to increasing the quality and efficiency of scientific research and artistic work, the development of interdisciplinary fields in doctoral and follow-up master's studies, international cooperation, and support for the publication of results, which is in line with BUT's Strategic Intent. Grants are financed from targeted support of the Ministry of Education. In 2021, a total of almost CZK 90 million supported 189 projects, of which 112 were junior (including 13 interfaculty) and 77 standard projects. Based on internal regulations, projects are organised as one-year faculty, one-year interfaculty or three-year faculty. The form of interfaculty projects focuses on multidisciplinary cooperation, optimal use of new devices, and technologies and infrastructures. The results of the solution at each faculty or department are defended at a student conference organised at least once a year. Assessors are from the ranks of BUT professors and associate professors, but experts from practice are also represented in the committees. These are mainly from companies with which BUT has a long-term cooperation or with which BUT graduates find employment. Student conferences are an opportunity for students to present their level of knowledge, creativity and research teamwork.

Furthermore, students are involved in research activities in various projects announced by the TA CR. These are, for example, projects in the Zéta programmes (aimed at supporting first-time researchers), Gamma or the National Competence Centre. The National Competence Centre programme 1 focuses on supporting long-term cooperation between the research and application spheres and strengthening the institutional base of applied research for the period of 2018 to 2022. BUT is the main beneficiary of two projects (the National Competence Centre for Aeronautics and Space, the National Competence Centre of Mechatronics and Smart Technologies for Mechanical Engineering) and co-researcher for another seven projects. BUT also won the Czech Idea 2021 competition announced by the Technology Agency of the Czech Republic. The winner in the Business category and the absolute winner of the Czech Idea 2021 award was a project by scientists from CEITEC BUT and Thermo Fisher Scientific, which is developing an atomic source for electron microscopy. In the Partnership category, the jury was most interested in the project Monitoring and Digital Forensic Analysis of the IoT Environment, in which FIT cooperates with Flowmon Networks.

The great advantage of studying at BUT is the opportunity to participate in research of the most current topics through

collaboration with companies. Companies that are interested in developing a new process, product or new idea can design a bachelor's or master's thesis topic and provide a professional guarantor who will consult with the student on their thesis.

As part of the Let´s Do Business! project prepared for the academic year 2021/2022, FBM and the South Moravian Innovation Centre worked together creating the university-wide course Development and Implementation of a Business Idea. At the same time, the second year of the BUT Student Entrepreneurship Award competition took place. Of the nine finalists, the absolute winner was a team of architects from FCE called Plastic Guys. The members of the team are dedicated to the recycling of plastic waste, from which they create design boards usable not only for shelters in the Czech forests, but also in interior design. The winners received an extraordinary scholarship of 100,000 crowns. Second place was awarded to the Hobby CNC milling machine designed by an FME student, while third place went to the QubiCone modelling system under the guidance of an FBM student.

Various other awards are proof of the high professional quality of BUT students' creative activity. In 2021, for example, Katrin Bučková from FME was awarded second prize in the Werner von Siemens Prize competition for her diploma thesis entitled Advanced EBM Technology. An extensive list of our awarded students can be found in the introductory part of the annual report in the Achievements and Awards chapter.

9.3 Dedicated funding for research, development and innovation received in 2021

In 2021, BUT received a total of CZK 2 billion in support of R&D, of which CZK 0.5 billion in institutional R&D support and CZK 1.5 billion in support earmarked for the implementation of R&D projects in current and capital funds. Of the total amount of the special-purpose subsidy for the implementation of R&D projects, 861 million was obtained for the position of principal researcher and 662 million in the position of co-researcher. As part of collaboration on implemented projects, BUT transferred CZK 167 million to partners. The largest share consists of subsidies obtained within the projects of the MEYS, TA CR, the Czech Science Foundation and MI.

9.4 Support for doctoral students and staff in post-doctoral positions

BUT provides support to doctoral students and staff in post-doctoral positions by announcing internal grant competitions, providing project support and technology transfer support, offering further education, career counselling, and offering mobility programs and measures to reconcile personal and professional life. Further specific support for doctoral students and post-doctoral students at BUT is implemented primarily at the level of individual faculties and departments. This is mainly due to the specificity and cost of training programmes for these students and young researchers.

Doctoral students are most often involved in projects organised within the framework of the student grant competition financed from funds allocated to BUT by the MEYS for specific university research. This grant competition is described in Chapter 9.2.

In 2021, the second round of the Internal Grant Competition within the OP RDE project entitled Quality BUT Internal Grants (KInG BUT) took place. The competition is intended for students in the first to third year of accredited doctoral study programmes. Through the implementation of one-year or two-year grants, individually or in a team, they will develop skills in managing a research grant and possibly a team of colleagues. The new experience should eventually increase the success in submitting scientific project proposals to national and international competitions. The successful implementation of a student grant includes, among other things, research or educational activities abroad (e.g. internship, summer school, research stay, active participation in a conference), which can be implemented in the EU and abroad. The scientific support of the research grant is provided by a mentor. The competition, and the evaluation and implementation of grants are conducted in English. The period for submitting grant applications was from September 15, 2021 to October 20, 2021. A total of 28 grants were supported (25 in panel A and 3 in panel B) out of a total of 85 evaluated. Over CZK 16 million was spent on individual and team grants in this round.

To increase the motivation of doctoral students, BUT annually announces a competition for the most productive doctoral students in terms of the quality of research and development results. Within this competition, the results of full-time doctoral students in the publishing and technological categories are evaluated. The reward for the three most efficient students in a given category is a financial reward in the form of a scholarship. This year, Martin Brtnický from FCH was awarded first place in the publishing category, and Jan Bubeník from FCE won the technological category.

A very important part of supporting doctoral students and staff in post-doctoral positions is the offer of further education. The BUT Institute of Lifelong Learning (ILL) offers a range of courses aimed at acquiring knowledge and skills important for future careers, whether in academia and research, in industry, in managerial positions or in setting up and running your own business. In addition to courses focused on soft skills (e.g. stress management, time management, teamwork, assertiveness and conflict management, various self-development courses, etc.), there are courses on the development of knowledge of working with different software, legal minimums and other practical skills (presentation skills, effective learning, stylistics of contemporary Czech, etc.). At BUT, doctoral students have the opportunity to expand their qualifications with additional pedagogical studies. This is through a one-year course provided by ILL, the proper completion of which will be marked by the student receiving a certificate. There are also language courses on offer, including Czech courses for foreigners. ILL also offers career counselling. In 2021, most courses had to be converted into webinars.

Some BUT faculties cooperate in the implementation of doctoral studies with selected institutes of the Academy of Sciences of the Czech Republic, such as the Institute of Analytical Chemistry, the Institute of Materials Physics and the Institute of Instrumentation, based on the Agreement on Cooperation in the Education of Doctoral Students.

BUT supports the mobility of doctoral students and staff in post-doctoral positions. Doctoral students are required to spend at least one month while studying abroad in order to gain the necessary experience. During their stay abroad, they are financially supported from institutional support projects, within which the university has set up a special project for the mobility of doctoral students. BUT also allocated a contribution to support international cooperation from the Ministry of Education, Youth and Sports for stays of doctoral students and academic staff abroad. BUT's key priority is also to attract doctoral and post-doctoral students from abroad.

The quality of the work of doctoral and post-doctoral students is also evident from the fact that many of them received awards for their work in 2021. Several doctoral students at BUT succeeded in a competition organised by JCMM called Brno Ph.D. Talent. Young researchers will thus receive financial support for their work from the city of Brno. In total, the expert jury selected 25 young talents. More information about the winners can be found in the introductory part of the annual report.

In the area of reconciling work and personal life, BUT offers its employees flexible working hours, holidays over and above those legally required, the offer of sports activities, discounted meals, recreational accommodation and other benefits. BUT also has a mini-kindergarten designed for irregular short-term care of the children of parents employed at BUT which is open from 7 am to 5 pm.

9.5 Cooperation with the application sphere on the creation and transfer of innovations and their commercialisation

The main areas of interest of the BUT Technology Transfer Office (hereinafter referred to as TTO) focus on the protection of intellectual property and legal support in concluding contracts with the application sphere. At the end of 2021, TTO registered 742 reported findings in the field of intellectual property, of which 31 were reported in the given year. This year, 93 authors took part in their creation. Following the exercise of the right by the Rector of BUT, 18 utility model applications, 4 patent applications in the Czech Republic and 5 international applications were filed out of the given notifications. A total of 30 utility models, 12 patents and 6 foreign patents were granted this year. From the faculties' point of view, FCE and FME contributed the most to this result.

Most of the announced inventions were created in cooperation with industry within various state-subsidised projects. Most projects are created at BUT under the auspices of TA CR. In 2021, 122 were submitted and 37 were accepted for funding. In addition, 18 license agreements were concluded on the subject of industrial protection rights (registered or granted patent or utility model), so that the total number of active license agreements rose to 85 and in 2021 amounted to CZK 2,780,000. It is worth mentioning the conclusion of a license agreement with a company that paid CZK 1,000,000 for it and undertook to pay all costs of legal protection of the invention, which in the last year amounted to CZK 450,000. Furthermore, it will pay CZK 100,000 in royalties each year.

The second highest income from the commercialisation of intellectual property in 2021 is almost CZK 900,000 as an annual license fee for the sale of a system for rescuing unmanned aerial vehicles. Hyperfit hyperelastic modelling software, developed at FME more than a decade ago, is still selling well, with TTO recording 14 licenses sold this year out of a total of 110 sold so far.

Another area of cooperation with the application sphere, which falls within the competences of TTO, are spin-off companies. As of December 31, 2021, BUT has a total of eight, of which one with a BUT stake (concluded at FIT in October 2021) and seven spin-off companies using BUT's intellectual property without BUT equity participation. In addition to the already mentioned spin-off with equity participation, two other spin-off companies were established this year, which helped to expand the existing portfolio.

9.6 Support for horizontal (cross-sectoral) mobility and education aimed at developing competencies for innovative entrepreneurship

In collaboration with the South Moravian Innovation Centre, Brno University of Technology also organised the Student Entrepreneurship Award in 2021. In the competition, the expert jury distributes a total of 800,000 crowns, which students or student teams can use to start their business. As mentioned above, the absolute winner of this year was a team of architecture students from FCE under the nickname Plastic Guys. The jury praised their ecological use of plastic waste for interior design or forest shelters as the best business project.

This competition is part of the Let's Do Business! project and serves to support entrepreneurship in general. While in previous years students completed a series of workshops with practitioners, often JIC staff, in 2021 a separate semester-long optional and free course was created, which can be enrolled on by students from all BUT faculties. The guarantor of the course is Vít Chlebovský from FBM. In addition to the above, the BUT Career Centre is also involved in student entrepreneurship. International and cross-sectoral mobility is further supported by the H2020 programme, specifically through the Marie Skłodowska-Curie Action (MSCA) projects.

10 Significant events related to the quality and evaluation of implemented activities in the year 2021

In connection with the strategic goals of BUT and the activities of previous periods, BUT continued to cooperate in 2021 with foreign and Czech professional institutions and universities in the field of quality assurance and evaluation. Of course, cooperation and educational activities involving the BUT academic community, including students, were also developed. Unfortunately, even these activities were affected by the COVID-19 pandemic.

In cooperation with the relevant vice-rectors, the staff of the Quality Department (hereinafter referred to as QD) paid attention to the creation of the Addendum to the Report on Quality Assurance and Internal Evaluation at Brno University of Technology for 2020. Considerable attention was also paid to national requirements (of the National Accreditation Office for Higher Education, hereinafter referred to as the NAO). Within the framework of cooperation with individual faculties of BUT and in accordance with the conclusions of the EUA evaluation committee, there was an overall attenuation of process analyses according to ISO 9000 at BUT and only those specific faculties that showed interest in certification, and eventually recertification, of BUT quality management systems and its components by an accredited body were supported.

In 2021, QD worked closely with BUT management to create strategies, in particular by supplying documents for the BUT Plan of Implementation of the Strategic Plan for 2022 (priority objective Quality Assurance and Strategic Management) and for evaluating the BUT Plan of Implementation of the Strategic Plan for 2021, in the form of comments on individual items listed in it.

The MOST project (Modern and Open Technical Studies) has played a significant positive role. In addition to the central level of BUT, a wide range of faculties and departments are also involved in its implementation. The project includes, among other things, the strategic activity A8 Quality Management System, within which QD deals with the sub-activity Development of a system for internal quality assurance and evaluation.

FBM staff were also significantly involved in the research team in the year under review, where individual parts of the proposed quality assessment methodology were tested in practice. In fact, at the end of 2021, a final report on internal quality assurance and evaluation at FBM was prepared. The work is exceptional in, among other things, the application of artificial intelligence tools used in the process of obtaining relevant FBM data and information and the use of artificial intelligence tools in the processes of ensuring and evaluating the quality of individual areas of FBM management.

A comparative study of the evaluation of several Czech universities and their components was created with collaborators from VŠB-TUO on the basis of the proposed quality indicators. BUT came out very well from this evaluation, both in the evaluation of performance and quality indicators of pedagogical or scientific research activities (among the evaluated were CU, MUNI, ICT, VŠB-TUO, TUL, UWB, CTU and BUT). These evaluations were carried out mainly on the basis of documents from the annual university reports for the period 2015–2020 and on the basis of data on school performance, which were published by the MEYS.

In accordance with the requirements of the university management, QD staff continuously participated in the creation of specific standards, guidelines and other methodological materials based on the requirements and standards of the NAO.

In the evaluated period, the attention of the researchers was focused mainly on:

- several working meetings (online) of QD representatives with Nottingham Trent University, specifically with colleagues who ensure quality at NTU. During these negotiations, there was an exchange of experiences, and attention was also focused on the issue of the quality of joint study programmes and the provision of internal quality assessment at both universities.

- continuation of the preparation of the international quality audit of BUT in the following period, especially with foreign academics specialising in the quality of universities (in Great Britain, Poland, Slovakia, etc.). These negotiations took place online again. Based on a number of discussions, it was decided to add the international audit of the final methodology of quality assurance and evaluation to the overall international evaluation of BUT, which will be carried out by EUA staff together with selected teachers from universities in other European countries in 2022.

The QD team participated in the design of the syllabus and in the creation of the text of the Report on Assurance and Internal Quality Assessment at BUT. In particular, the report respected the basic requirements of the NAO for the evaluation of the field of education, the field of creative activities and the activities that support these core processes. In addition, the report captures a broader view of the quality of BUT, for example in terms of internationalisation, external relations and social responsibility (the third role of universities).

In 2021, QD paid great attention especially to the creation of methodology and methodological documents for ensuring and evaluating the quality of university activities. In cooperation with the relevant vice-rectors, QD staff also incorporated the knowledge and experience of other universities (especially technical ones) as well as Czech national requirements (e.g. Methodology 17+, the role of students in the evaluation and quality assurance process of Czech universities, cooperation with employers of our graduates).

An online conference entitled Building trust and enhancement: From information to evidence was held on November 18 and 19, 2021 under the auspices of the European Quality Assurance Forum. The conference was also attended by a representative of QD. Due to the complex epidemiological situation, the participation of QD in the annual meeting of teachers from secondary schools, colleges and universities, as well as representatives of departments dealing with quality management, which is traditionally organised by the staff of the Department of Quality Management FMT VŠB-TUO, had to be cancelled that year.

11 National and international excellence of the university

11.1 International and important national research, development and creative activities, integration of research infrastructure into international networks and involvement of BUT in professional and artistic networks

BUT is a member of a number of important institutions, scientific and artistic networks, organisations and associations. Below are selected international organisations in which BUT representatives work:

Association of European Schools of Planning, The American Ceramic Society, Conference of European Schools of Advanced Engineering Education and Research (CESAEER), CISCO Networking Academy, European League of Institutes of the Arts, European Quality Association for Recycling, European Universities Public Relations and Information Officers, European Association for Accident Research and Analysis, European Structural Integrity Society, European University Association, European Association for International Education, Global Business and Technology Association, Gesellschaft für Informatik, International Council of the Aeronautical Science, International Federation for the Promotion of Mechanism and Machine Science, The International Federation for Structural Concrete, The International Union for Vacuum Science, Technique and Applications, Federation of European Heating, Ventilation and Air Conditioning Associations, Transformation in Business and Economics, Die Wissenschaftlich-Technische Arbeitsgemeinschaft für Bauwerkserhaltung und Denkmalpflege and many others.

In addition, BUT staff are active in a number of professional associations, organisations and groups. We can note:

Association of University Libraries of the Czech Republic, Association of Mechanical Engineers, Association of Experts and Appraisers of the Czech Republic, Czech Education and Scientific NETwork (CESNET), Czech and Slovak Society for Soil Mechanics and Geotechnical Engineering, Czech Concrete Society, Czech Physical Society, Czech Chamber of Chartered Engineers and Technicians Engaged in Construction, Czech Foundry Society, Czech Chemical Society, Czech Society for Mechanics, Czech Society for Non-Destructive Testing, Czech Welding Society, Czech Vacuum Society, Czech Society for New Materials and Technologies, Czech National Hydrology Committee, Czech-Moravian Association of Women Entrepreneurs and Managers , Electrical Engineering Association of the Czech Republic, European Association for Biometrics, Institute of Electrical and Electronics Engineers, International Society for Optics and Photonics, International Society of Electrochemistry, International Union of Radio Science, Union of Czech Mathematicians and Physicists, National Platform Transfera, Railway Infrastructure Association, Association for Rehabilitation of Concrete Structures, Society for Radio Electronics Engineering, Society for Environmental Engineering, Association of Czech Booksellers and Publishers, Technical Standardization Committee of the Czech Standardization Agency, Energy Safety Technology Platform, Scientific and Technical Society for Building Rehabilitation and Preservation, etc.

11.2 BUT national and international awards in 2021

An extensive list of awards can be found in the introductory part of the annual report under Achievements and Awards at BUT. We can briefly mention, for example, the Josef Hlávka Award, the Czech Idea Award, the Brno Ph.D. Talent competition, the Golden Semicolon competition, the Brno City Award, the National Award for Student Design, the IT Spy competition, the Award for Young Ukrainian Artists, the Jan Opletal Award, the title School Recommended by Employers, the Gold Medal of the International Engineering Fair and many others. Due to the epidemiological situation, a number of online competitions were held in 2021 as well.

11.3 BUT international evaluation, including foreign accreditations

On February 12, 2021, BUT received the HR Award. The European Committee has thus confirmed the position of the Brno University of Technology among European research institutions. Of Brno universities, Mendel University and one of the faculties of Masaryk University, along with with CEITEC MUNI already have the HR Award. BUT requested this international evaluation for the entire university at the end of 2019 and after more than a year it succeeded in the certification process, without reservations and without comments.

In 2021, BUT also submitted a registration for re-evaluation by the European University Association within the Institutional Evaluation Programme. The re-evaluation follows the international evaluation from 2018 and will take place in 2022.

In 2021, BUT received institutional accreditation in the field of the arts. Institutional accreditation entitles BUT to approve its own study programmes, thus better responding to the needs of practice and the labour market. In addition to the existing educational areas, the last necessary field has been added, namely the field of the arts, which will enable more flexible preparation of study programmes, especially at FFA. In previous years, BUT has already obtained institutional accreditation for the areas of education: architecture, electrical engineering, energy, chemistry, informatics, construction, economics, as well as the combined field of engineering, technology and materials.

For the third time in a row, BUT ranked 23rd out of the evaluated universities in the current QS EECA ranking (Emerging Europe and Central Asia). Overall, the Brno University of Technology ranked among the best 6% of universities in this ranking, where QS focuses on the region of Eastern Europe and Central Asia. A total of five universities from domestic schools were included in the TOP50 selection, BUT is fourth. The ranking evaluates, for example, publishing activities, the number of foreign students, international research and other areas of education. BUT scored the best in the Employer Reputation category.

BUT positioned in the group from 801–1000th in the Times Higher Education (THE) magazine in the Engineering category, along with CTU, ICT, CULS, UWB and TBU. BUT also ranks in the subcategories Mechanical Engineering, Civil Engineering, Electrical Engineering and Chemical Engineering. The second ranking in which the university is placed is Computer Science, where it is in the 501–600th group, along with UK, CTU and MUNI. In the past, the Computer Science rating was also a subcategory under Engineering, but it is now a separate section at the same level. THE additionally published an evaluation in the Business and Economics category, where BUT is in the shared position 601+.

In the QS Graduate Employability Ranking, BUT holds 201–250th position, as in the previous year. The applicability of graduates and their readiness for the labour market from the point of view of employers is evaluated here. The creators of the ranking also examine the number of companies that collaborate with the university and, in general, the degree of contact with work experience during their studies.

In a strong international competition, CEITEC BUT managed to win five MCSA Individual Fellowship projects and thus expand the number of these international grants for talented individuals to ten for the entire BUT during the existence of this grant scheme. With regard to talented young researchers, CEITEC BUT is also one of the few institutions that traditionally have significant participation in the Brno Ph.D. Talent competition.

Five BUT projects impressed the evaluating committee of the Marie Skłodowska-Curie postdoctoral fellowships. BUT thus received the most grants from domestic universities. Four of the five successful projects go to CEITEC BUT, specifically to the team of chemist Martin Puma. The fifth was awarded to the team of Jan Čechal, who, in addition to CEITEC BUT, also works at FME and focuses on nanotechnology.

12 The third role of BUT

12.1 Transfer of knowledge into practice

This area is part of the Brno Technology Department's agenda for the BUT Technology Transfer Department. More about the area of technology transfer can be found in Chapter 9.5. Cooperation with the application sphere on the creation and transfer of innovations and their commercialisation.

A new technology for water purification using cavitation and low-temperature plasma won the Gold Medal at the International Engineering Fair 2021 on November 8, 2021. The CaviPlasma device can remove chemical residues from water and also kill pathogenic microorganisms. This invention of FME, with the potential to handle large volumes of water and find applications in industry, was successful in the processing technology category. This is one of the practical examples of research from the laboratories of the Brno University of Technology, which has a high application potential.

Also this year, the Technology Transfer Office offered educational events and courses on the topics of intellectual property and its protection, the use of results arising in various subsidised research projects and beyond, and on general legal issues with subsidised projects. Educational events and courses are intended for BUT employees and it is possible to tailor them to the specific needs of the faculty or department and present them in Czech or English. Thanks to them, we succeed in raising awareness of intellectual property issues and related processes at BUT.

On October 21, 2021, the National Technical Library in Prague hosted the second year of Transfer Technology Day (hereinafter referred to as TTD). TTD is the culmination of a process that begins with the registration of a project that is in the more advanced or final stage of Proof of Concept. Testimonials from renowned experts give scientists valuable feedback and the competition day itself ends with the ceremonial announcement of the winner. Vratislav Čmiel participated in the call on behalf of BUT, along with Marina Ronzhina and Inna Zumberg, and with the support of technology transfer manager Vratislav Harabiš. The team from FEEC BUT signed up with the project Spectroll – Smart Spectrophotometric Analyser.

The Spectroll non-contact optical analyser has high potential to facilitate access to affordable quality measurement for many businesses and manufacturers. The device impresses with its size and absolutely unpretentious operation, thus enabling the analysis of samples even by persons without professional education. It is therefore a mobile device that can be used especially in industry where frequent testing is required during production or processing. Spectroll uses machine learning in its analysis, thus achieving its advantages, thanks to which it can contribute to faster, more accurate and cheaper contactless analysis of product composition. The project received a positive jury evaluation and was recommended for commercialisation.

12.2 Operating in the region, cooperation with regional governments and major institutions in the region

The year 2021 was marked by the further development of the large research infrastructure CzechNanoLab, which was created by the merger of the research infrastructures and shared laboratories CEITEC Nano at CEITEC BUT and LNSM at the Institute of Physics of the ASCR in Prague. Through the CEITEC Institute, BUT thus plays a key role in one of the largest research infrastructures in the Czech Republic, with significant potential for further growth. This year, work continued on the completion of the second research infrastructure in the field of Industry 4.0 within the RICAIP project in the Teaming for Excellence programme, which is expected to open in 2022.

Within the region, BUT focuses primarily on cooperation within the Regional Innovation Strategy of the South Moravian Region. This is a long-term plan that increases the competitiveness of the whole of South Moravia. Since 2001, RIS SMR has brought together scientists from universities and research centres, owners of technology companies, people from local government and the active public.

BUT also declares active cooperation with the statutory city of Brno and the South Moravian Region.

In the long term, BUT supports the closeness of the connection between BUT academic research and companies, where we have seen progress in recent years, despite the fact that differences in the approach of both spheres persist. Strengthening BUT's links with the application sphere leads to other project possibilities, collaborative projects, accelerating contractual research and objectively measured applicability of results such as licensing agreements, the emergence of spin-off companies, provision of consultancy services and the resulting financial gains, and further increasing BUT's competitiveness as a major technical university on a national and international scale.

BUT can now be proud of the award for its access to public procurement. At a conference organised by the Ministry of Labour and Social Affairs, their representatives praised BUT as an institution that significantly contributes to the development of this area. BUT received the award for its long-term responsible approach to public procurement, among other things for connecting the innovative method of awarding public contracts in the Best Value Approach project, which it has been promoting and implementing for several years in its procurement or selection procedures with aspects of responsible procurement.

The Rector of BUT signed a memorandum in 2021 for higher use of hydrogen. The cooperation concerns joint activities on the development of sustainable energy, transport and environmental protection, including the creation of the European Institute for the Use of Hydrogen and New Technologies, based in Brno. In addition to the city of Brno, other signatories are the Brno University of Technology, Teplárny Brno, Dopravní podnik města Brna, SAKO Brno and Symbios Funding & Consulting GmbH. The role of BUT is key, as it will cooperate with major European universities in the education of future professionals – the use of new technologies is part of the portfolio of BUT's educational fields.

The unexpected and devastating tornado in the villages in southern Moravia at the end of June 2021 provoked a great wave of solidarity and offers of aid. BUT was not left behind either. First was the list of BUT staff who were able to help the Emergency Team of the South Moravian Region with evaluation of the structural damage to buildings. The management of BUT Halls of Residence and Canteens offered 600 beds to people who were left without a roof over their heads after the windstorm. At the same time, the university announced that it was offering help to its students and employees who were affected by the elements (for example, the purchase of work or study aids).

Immediately after the event itself, South Moravian firefighters turned to experts from the BUT Aviation Institute and asked them to take a picture of the entire affected area. Technicians in an ultralight aircraft, which is commonly used for research and training purposes, filmed the 25-kilometre-long swath left behind by the tornado. They processed the data into an orthophoto map and provided it to rescuers. They went to the area several more times with the plane, so their pictures also showed gradual clearing and repair of the villages.

Experts from the Institute of Forensic Engineering at BUT also went to South Moravian municipalities. Property valuation experts went through the tornado-damaged municipal buildings and calculated how much repairs would cost. From the original estimate of thirty buildings, the final number of inspected buildings climbed to one hundred. Gradually, over two weeks, they estimated the damage to municipal property in Hodonín, Břeclav, Valtice, Moravská Nová Ves, Mikulčice, Hrušky and Lužice. They passed the results of the research to the representatives of the South Moravian Region as a basis for approving government financial assistance to the affected municipalities.

On the spot involvement in the voluntary help was a matter of course, i.e. cleaning up the consequences of the natural disaster. Dozens of employees and students of the Brno University of Technology went to the affected places on several occasions.

12.3 Superregional activities and importance of BUT

Thanks to scientists from CEITEC BUT, a new testbed representing industry 4.0 in practice is being created in Brno. The RICAIP project, or the Research and Innovation Centre for Advanced Industrial Production, is a project of four research institutions, including CEITEC BUT, CIIRC CTU in Prague and German partners DFKI and ZeMA. Thanks to their cooperation, interconnected robotic workplaces are being created at individual institutions, which will lay the foundation for a Czech-German research centre focused on advanced production. In the course of 2021, intensive work was carried out on the commissioning of the testbed in the premises of the AdMaS workplace, while the ceremonial commissioning is scheduled for 2022.

The Brno research centre CEITEC BUT received another holder of the prestigious ERC grant this year. Eric D. Glowacki's research is directly motivated by medical applications. His work deals with groundbreaking research and development of wireless nerve stimulation, which is used in the human body. Members of his research group work on the production of ultra-thin and wireless stimulators powered from outside the body. The Polish scientist and his team moved to Brno from Linköping, Sweden.

An inconspicuous sensor on the rail, which detects any vibrations and excitements, sends a signal and artificial intelligence evaluates the potential risk. According to FME experts, this could be a recipe for increasing railway safety. They are collaborating on research with domestic and Taiwanese partners. After a rail accident that killed more than 50 people in Taiwan and injured two hundred, safety became a priority for the authorities. Therefore, scientists from Taiwan want to put the test deployment of promising technology from the Czech Republic into practice as soon as possible.

In addition to a number of examples of international cooperation, it is possible to mention the availability of BUT's research infrastructure. For example, CEITEC BUT workplaces are not intended only for their researchers. The laboratories operate in an open access mode and are therefore accessible not only to researchers and doctoral students from BUT, but also from other Brno universities, research institutions and industrial partners. However, this also applies to other laboratories in Brno, for example in the CVVOZE centre and other places.

13 University activities in connection with the effects of the pandemic caused by COVID-19

13.1 Evaluation in the field of educational activities

In 2021, the examination period of the winter semester of the academic year 2020/2021 and the vast majority of teaching in the summer semester took place in a distance form. BUT used its experience from 2020, so it was easier to maintain the quality of implementation of all study programmes. In some study programmes it was possible to replace teaching in the form of distance learning without major problems, on the contrary, study programmes with a large share of laboratory, studio or other practical teaching had to face a number of difficulties. During the examination period of the summer semester, as well as the state final examinations, the examination of students could already take place partly in the usual full-time form. In the winter semester of the academic year 2021/2022, seminar and laboratory teaching took place in full-time form without major restrictions.

In 2021, there was also a crisis staff at BUT, whose task was to coordinate measures to prevent the spread of COVID-19 and the application of decisions and measures made by public authorities. The Crisis Staff is chaired by the Rector of BUT and its members are representatives of the university management, representatives of the academic senate, dormitories and canteens, the legal department and the commissioner for GDPR. The Crisis Staff also dealt with matters of study, the arrival of students from abroad, issues of students entering BUT buildings, their stay at BUT dormitories and a number of other current situations.

Eight decisions were issued by the BUT Rector in 2021 on the application of public authority decisions in connection with the coronavirus epidemic, namely in connection with the development of the crisis situation with the spread of coronavirus, which always responded immediately to the current situation. Students were regularly updated with information on teaching, stays at BUT premises, stays at BUT dormitories and more. Students then dealt with specific problems at the study departments of their faculties, or at the study vice-deans. Methodological support for dealing with all problems connected with the course of study of individual students was provided by the Office of Academic Affairs of BUT.

The BUT Computer and Information Services Centre provided technical support for distance learning, and the faculties provided sufficient material support for this method of teaching. Training for teachers on the use of the Moodle system and the MS Teams application in teaching and in verifying students' knowledge took place. In the autumn months, the Office of Academic Affairs of BUT issued a new Methodological Sheet No. 3/2021 entitled Ensuring remote verification of study results at BUT at the time of limiting the presence of students in university studies, which clarified and innovated the originally established rules to ensure the quality of such knowledge verification. In the winter semester of the academic year 2021/2022, distance verification of knowledge took place only in exceptional cases, where objective circumstances did not allow for standard examination in accordance with the accreditation of the study programme.

13.2 Evaluation in the field of research activities

Even in 2021, BUT employees and students contributed with their research activities to the prevention and management of the COVID-19 pandemic. FIT students Josef Kolář and Peter Uhrín have developed a new application that allows users to search for vaccination and testing sites with barrier-free access using an interactive map.

Researchers from BUT also worked on a number of projects dealing with the topic of COVID-19 in terms of various disciplines. FBM staff, for example, addressed the impact of the current pandemic on organisational culture and the process of digital transformation in organisations. Technological transformation in the form of advanced technologies has a fundamental influence on the company's processes. Significant interventions in the work environment require that the organisational culture be adjusted and adapted to the new conditions. The aim of the project is to identify and describe these desirable changes.

The project of the Ministry of the Interior entitled the COVID-19 early detection system for the safety of vulnerable groups using artificial intelligence is being addressed by FEEC staff. The project is developing an intelligent modular health security system for the early detection of patients with COVID-19. The tests used today for the presence of COVID-19 are not reliable and there is a real risk of the infection being introduced into the community of vulnerable people. The proposed system provides an additional degree of infection detection and will allow early detection using existing health data. It provides protection for vulnerable groups in the population, i.e. especially patients with chronic diseases, such as diabetes, cardiovascular diseases, chronic respiratory diseases or oncological diseases.

FME scientists are the originators and researchers of the Czech Science Foundation's Sustainable Plastic Value Chain to Support a Circular Economy Transition project. The project

responds to an increase in the amount of plastic waste due to the COVID-19 pandemic. The aim of the project is to find ways to minimise the negative environmental impacts and maximise the economic value of plastics through their circulation and by improving the value chain of plastics.

Another project implemented at FME is OpenTube2: robotic workplace for handling COVID-19 samples. The aim of the project is to complete a new, as yet non-existent and unique solution, focused on automated laboratory processing of potentially dangerous samples in laboratories.

In response to the pandemic, a number of publications on COVID-19 were published in 2021. The response to these publications reflects the fact that three of them are among the most highly cited papers (1% of the most cited publications in the field in a given year). These are the publications of Jiang, P. et al. (2021a) dealing with the change in car traffic intensity during the pandemic, Jiang, P. et al. (2021b) addressing the change in energy consumption during the pandemic and Van Fan, Y. (2021) addressing the pandemic from a waste management perspective. The second mentioned publication also belongs to the so-called hot papers, i.e. among the articles that received a large number of citations very soon after publication (more precisely, these are 0.1% of the most cited articles in the field within two months of publication). Jiří Klemeš from FME and the NETME centre co-authored all three publications, while he is the corresponding author of the latter two.

13.3 Evaluation in the area of the third role and other activities of the university

In 2021, there was direct support for students who, for various reasons, experienced discomfort in their lives (often difficulties exacerbate the effects of the COVID-19 pandemic), or who wanted to acquire skills that contribute to the effective management and prevention of these difficulties. The main areas of intervention in which the Alfons Counselling Centre was involved were the following:

- Counselling services (psychological counselling, career counselling, coaching, professional-personality profile), which have been converted to an online form. Students can now decide whether to choose the in person or online form of meeting.

- Alfons organised thirty-two courses this year, most of which took the form of webinars. The courses aimed to develop more general intellectual and social competencies that will enable students and future graduates to respond to new situations in the study and labour market, thus coping with the new challenges posed by coronavirus. Specifically, these were courses in stress management, time management, training relaxation methods, effective human communication, critical thinking, building good habits, identifying your strengths and the topic of effective learning. The courses were attended by 451 students and 93.6% evaluated them positively.

- Converting the Study at University brochure effectively into an online form. The handbook is used to present the topics that most often appear in individual consultations and courses. They are motivation, memory, effective learning, anxiety, stress, trepidation and procrastination.

- Alfons organised regular guided relaxations for students online. A series of articles were shared on social networks on self-coaching, planning and working with priorities, and scientific studies on how to cope with distance learning.

As part of indirect student support, a methodology was created for teachers and other BUT employees on the topic of helping students in mental discomfort. This is a list of workplaces that employees can offer students if, for example, they confide in them about their problems and expect help from them.

A support telephone line and support consultations have been set up for students with special needs, as well as crisis assistance for all BUT students who have felt mental discomfort due to the pandemic. Indirect support for students is also provided through social networks (Facebook and Instagram) and the creation of a comprehensive brochure and poster on what to do when I have mental problems.

The SARS-CoV-2 coronavirus pandemic negatively affected the accessibility of information to students with hearing impairments. The Alfons Centre responded to the situation by interpreting and transcribing online. A service of subtitled recordings from lectures was offered, and an interpreter from/into Czech Sign Language was keyed into the records from the exercises. These services have become the only way for deaf students to obtain the necessary information for their studies.

In 2021, the number of students who turned to the Alfons Centre for a consultation increased due to a loss of motivation to study, thoughts about graduating, and problems with time management. A significant increase was noted in attention disorders. The services provided for students with attention deficit disorder (ADHD/ADD) have been expanded. Fifteen students with dyslexia who were interested, were provided with the full version of the online course Rozečti.se, which aims to speed up reading.

In the spring semester of the academic year 2020/2021, for epidemiological reasons, the teaching of the University of the Third Age at BUT had to be carried out online. Approximately 20% of them switched from the previously planned full-time courses to distance learning. Other courses had to be cancelled because the lecturers did not like the distance form of the courses and some students had the same opinion.

Distance learning was implemented through making the recordings of lectures available on the BUT YouTube channel. In general, U3V BUT recorded a noticeable decrease in students in the spring of 2021 due to the transition to distance learning. Some U3V students welcome this form of teaching, but there are not many. 10% of originally registered students took part in distance learning. In the winter semester 2021/2022, the teaching of U3V BUT started in full-time form. In December, again due to the pandemic situation, the teaching was interrupted, with the lectures being replaced in LS 2022. If the teaching changed to the distance form, it was implemented via the Google Meet application.

This year, universities helped the South Moravian Region with vaccinations. BUT experts specifically offered a simulation that would help set up a system of regional vaccination centres. Cooperation between the representatives of the South Moravian Region and the University Hospital Brno was also agreed. The staff of the Institute of Informatics FCE thus helped with the preparation of a large-capacity vaccination centre in the premises of the Brno Exhibition Centre and also with the preparation of a smaller centre in Znojmo. In a very short time, they were able to plan the movement of hundreds of people a day – even down to seconds. At the Brno Exhibition Centre, the researchers monitored the entire vaccination process of the first senior citizens and subsequently created 3D and VR (virtual reality) models in computer simulations so that they could examine the operation of the centre at full capacity with patients of different mobility, including filling waiting rooms.

Although it is not directly about help in the area of COVID-19, in 2021 the help of students and BUT employees after the devastating tornado, which swept through villages in South Moravia, was also crucial for the third role of the university. More information on the BUT aid efforts, which this year focused on eliminating the consequences of the devastating tornado, can be found in Chapter 12.2, which emphasises the activities of the university in the region.

TABULAR PART

OF THE BUT ANNUAL REPORT FOR 2021

Tab. 2.1: Accredited study programmes (numbers)

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
		F	C/D	F	C/D	F	C/D	F	C/D	
Faculty of Civil Engineering										
Broadly defined ISCED-F fields	code									
Natural sciences, mathematics and statistics	05	1	0	0	0	1	0	2	2	6
Technology, production and construction	07	9	3	0	0	13	2	10	10	47
Faculty total	**X**	**10**	**3**	**0**	**0**	**14**	**2**	**12**	**12**	**53**
Faculty of Mechanical Engineering										
Broadly defined ISCED-F fields	code									
Arts and humanities	02	1	0	0	0	0	0	0	0	1
Natural sciences, mathematics and statistics	05	1	0	0	0	3	0	2	2	8
Technology, production and construction	07	9	2	0	0	20	5	15	10	61
Faculty total	**X**	**11**	**2**	**0**	**0**	**23**	**5**	**17**	**12**	**70**
Faculty of Electrical Engineering and Communication Technologies										
Broadly defined ISCED-F fields	code									
Arts and humanities	02	1	0	0	0	0	0	0	0	1
Information and communication technologies	06	2	0	0	0	2	0	4	4	12
Technology, production and construction	07	7	4	0	0	15	5	12	12	55
Faculty total	**X**	**10**	**4**	**0**	**0**	**17**	**5**	**16**	**16**	**68**
Faculty of Architecture										
Broadly defined ISCED-F fields	code									
Technology, production and construction	07	2	0	0	0	2	0	2	2	8
Faculty total	**X**	**2**	**0**	**0**	**0**	**2**	**0**	**2**	**2**	**8**
Faculty of Chemistry										
Broadly defined ISCED-F fields	code									
Natural sciences, mathematics and statistics	05	3	2	0	0	1	0	6	6	18
Technology, production and construction	07	6	6	0	0	5	4	4	4	29
Faculty total	**X**	**9**	**8**	**0**	**0**	**6**	**4**	**10**	**10**	**47**
Faculty of Business and Management										
Broadly defined ISCED-F fields	code									
Social sciences, journalism and information sciences	03	0	0	0	0	2	0	0	0	2
Business, administration and law	04	6	0	0	0	5	4	3	2	20
Information and communication technologies	06	0	0	0	0	1	0	0	0	1
Faculty total	**X**	**6**	**0**	**0**	**0**	**8**	**4**	**3**	**2**	**23**
Faculty of Fine Arts										
Broadly defined ISCED-F fields	code									
Arts and humanities	02	1	0	0	0	1	0	1	1	4
Faculty total	**X**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**4**
Faculty of Information Technology										
Broadly defined ISCED-F fields	code									
Information and communication technologies	06	2	0	0	0	2	0	1	1	6
Faculty total	**X**	**2**	**0**	**0**	**0**	**2**	**0**	**1**	**1**	**6**

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
		F	C/D	F	C/D	F	C/D	F	C/D	
Institute of Forensic Engineering										
Broadly defined ISCED-F fields	code									
Technology, production and construction	07	0	0	0	0	2	0	2	2	6
Services	10	0	0	0	0	1	0	0	0	1
Department total	**X**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**2**	**7**
Centre of Sports Activities										
Broadly defined ISCED-F fields	code									
Technology, production and construction	07	1	0	0	0	0	0	0	0	1
Department total	**X**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
CEITEC BUT										
Broadly defined ISCED-F fields	code									
Technology, production and construction	07	0	0	0	0	0	0	1	0	1
Department total	**X**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
Brno University of Technology										
Broadly defined ISCED-F fields	code									
Arts and humanities	02	3	0	0	0	1	0	1	1	6
Social sciences, journalism and information sciences	03	0	0	0	0	2	0	0	0	2
Business, administration and law	04	6	0	0	0	5	4	3	2	20
Natural sciences, mathematics and statistics	05	5	2	0	0	5	0	10	10	32
Information and communication technologies	06	4	0	0	0	5	0	5	5	19
Technology, production and construction	07	34	15	0	0	57	16	46	40	208
Services	10	0	0	0	0	1	0	0	0	1
University TOTAL	**X**	**52**	**17**	**0**	**0**	**76**	**20**	**65**	**58**	**288**

Tab. 2.2: Study programmes in a foreign language (numbers)

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
		F	C/D	F	C/D	F	C/D	F	C/D	
Faculty of Civil Engineering										
Broadly defined ISCED-F fields	code									
Natural sciences, mathematics and statistics	05	0	0	0	0	0	0	1	1	2
Technology, production and construction	07	2	0	0	0	2	0	5	5	14
Faculty total	**X**	**2**	**0**	**0**	**0**	**2**	**0**	**6**	**6**	**16**
Faculty of Mechanical Engineering										
Broadly defined ISCED-F fields	code									
Natural sciences, mathematics and statistics	05	0	0	0	0	1	0	1	1	3
Technology, production and construction	07	1	0	0	0	5	0	8	2	16
Faculty total	**X**	**1**	**0**	**0**	**0**	**6**	**0**	**9**	**3**	**19**

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
		F	C/D	F	C/D	F	C/D	F	C/D	
Faculty of Electrical Engineering and Communication Technologies										
Broadly defined ISCED-F fields	code									
Information and communication technologies	06	0	0	0	0	0	0	2	2	4
Technology, production and construction	07	1	0	0	0	5	0	6	6	18
Faculty total	**X**	**1**	**0**	**0**	**0**	**5**	**0**	**8**	**8**	**22**
Faculty of Architecture										
Broadly defined ISCED-F fields	code									
Technology, production and construction	07	2	0	0	0	2	0	0	0	4
Faculty total	**X**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**4**
Faculty of Chemistry										
Broadly defined ISCED-F fields	code									
Natural sciences, mathematics and statistics	05	0	0	0	0	0	0	2	2	4
Technology, production and construction	07	0	0	0	0	1	0	1	1	3
Faculty total	**X**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**3**	**7**
Faculty of Business and Management										
Broadly defined ISCED-F fields	code									
Social sciences, journalism and information sciences	03	0	0	0	0	1	0	0	0	1
Business, administration and law	04	2	0	0	0	2	0	2	1	7
Faculty total	**X**	**2**	**0**	**0**	**0**	**3**	**0**	**2**	**1**	**8**
Faculty of Fine Arts										
Broadly defined ISCED-F fields	code									
Arts and humanities	02	1	0	0	0	1	0	1	0	3
Faculty total	**X**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**3**
Faculty of Information Technology										
Broadly defined ISCED-F fields	code									
Information and communication technologies	06	1	0	0	0	1	0	1	1	4
Faculty total	**X**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**4**
CEITEC BUT										
Broadly defined ISCED-F fields	code									
Technology, production and construction	07	0	0	0	0	0	0	1	0	1
Department total	**X**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
Brno University of Technology										
Broadly defined ISCED-F fields	code									
Arts and humanities	02	1	0	0	0	1	0	1	0	3
Social sciences, journalism and information sciences	03	0	0	0	0	1	0	0	0	1
Business, administration and law	04	2	0	0	0	2	0	2	1	7
Natural sciences, mathematics and statistics	05	0	0	0	0	1	0	4	4	9
Information and communication technologies	06	1	0	0	0	1	0	3	3	8
Technology, production and construction	07	6	0	0	0	15	0	21	14	56
University TOTAL	**X**	**10**	**0**	**0**	**0**	**21**	**0**	**31**	**22**	**84**

Tab. 2.3: Joint/Double/Multiple Degree study programmes implemented with a university abroad

Brno University of Technology	Faculty of Mechanical Engineering
Name of the programme 1	**Production Technology**
Partner organizations	Technische Universität Chemnitz (Germany)
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Bachelor
Number of active studies as of December 31	4

Name of the programme 2	**Industrial Engineering**
Partner organizations	Art et Métiers ParisTech (Cluny, France)
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	0

Name of the programme 3	**Production Systems**
Partner organizations	Technische Universität Chemnitz (Germany)
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	1

Name of the programme 4	**Applied and Interdisciplinary Mathematics**
Partner organizations	University of L'Aquila, Italy
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	0

	Faculty of Electrical Engineering and Communication Technologies
Name of the programme 1	**Telecommunications**
Partner organizations	Technische Universität Wien, Austria
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Joint Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	3

Name of the programme 2	**Communications and Networking (Double-Degree)**
Partner organizations	Universita Tampere, Finland
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	5

Name of the programme 3	**Microelectronics (Double-Degree)**
Partner organizations	Northern Illinois University, USA
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	0

Name of the programme 4	**Bioengineering**
Partner organizations	The University of Applied Sciences, Technikum Wien
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	6

Name of the programme 5	**Electronics and Information Technologies (Double-Degree)**
Partner organizations	TU Tampere
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	13

	Faculty of Chemistry
Name of the programme 1	**Environmental Sciences and Engineering**
Partner organizations	University Koblenz-Landau, Germany
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	4

Name of the programme 2	**Biophysical Chemistry**
Partner organizations	University of Huelva, Spain
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	0

	Faculty of Business and Management
Name of the programme 1	**European Business and Finance**
Partner organizations	Nottingham Trent University (GB), Karol Adamiecký University of Economics in Katowice (PL)
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Joint Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	0

	Faculty of Information Technology
Name of the programme 1	**Information Technology**
Partner organizations	Lappeenranta University of Technology, Finland
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double Degree
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	0

	CEITEC BUT
Name of the programme 1	**Advanced Materials and Nanosciences**
Partner organizations	University of Bari Aldo Moro
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double degree/Cotutelle
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	1

Name of the programme 2	**Advanced Materials and Nanosciences**
Partner organizations	Université Grenoble Alpes
Affiliated organizations	
Kind of programme (Joint/Double/Multiple Degree)	Double degree/Cotutelle
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	1

Summary information on tab. 2.3

Brno University of Technology	Bachelor's studies	Master's studies	Follow-up Master's studies	Ph.D. studies	Total
Number of study programmes	1	0	9	3	**13**
Number of active studies in these programmes	4	0	19	15	**38**

Tab. 2.4: Accredited study programmes carried out jointly with another university or with a public research institution based in the Czech Republic

Brno University of Technology	Faculty of Mechanical Engineering
Name of the programme 1	**Engineering Mechanics**
Broadly defined ISCED-F field	0715
Partner university/institution	Institute of Physics of Materials AS CR
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	12

Name of the programme 2	**Material Sciences**
Broadly defined ISCED-F field	0719
Partner university/institution	Institute of Physics of Materials AS CR
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	2

Name of the programme 3	Physical Engineering and Nanotechnology
Broadly defined ISCED-F field	0533
Partner university/institution	Institute of Instrumentation AS CR
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	9

Name of the programme 4	Materials Sciences
Broadly defined ISCED-F field	0719
Partner university/institution	Institute of Physics of Materials AS CR
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	0

Name of the programme 5	Applied Mechanics
Broadly defined ISCED-F field	0715
Partner university/institution	Institute of Physics of Materials AS CR
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	0

Name of the programme 6	Physical Engineering and Nanotechnology
Broadly defined ISCED-F field	0533
Partner university/institution	Institute of Instrumentation AS CR
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	0

Faculty of Electrical Engineering and Communication Technologies

Name of the programme 1	Biomedical Engineering and Bioinformatics
Broadly defined ISCED-F field	0688
Partner university/institution	Faculty of Medicine MU
Type of programme (bachelor, follow-up master, master, doctoral)	Bachelor
Number of active studies as of December 31	189

Name of the programme 2	Audio Engineering
Broadly defined ISCED-F field	0714
Partner university/institution	JAMU Faculty of Music
Type of programme (bachelor, follow-up master, master, doctoral)	Bachelor
Number of active studies as of December 31	203

Name of the programme 3	**Audio Engineering**
Broadly defined ISCED-F field	0714
Partner university/institution	JAMU Faculty of Music
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Number of active studies as of December 31	54

	CEITEC BUT
Name of the programme 1	**Advanced Materials and Nanosciences**
Broadly defined ISCED-F field	technical sciences 21-39
Partner university/institution	Masaryk University
Type of programme (bachelor, follow-up master, master, doctoral)	Doctoral
Number of active studies as of December 31	133

Summary information on tab. 2.4

Brno University of Technology	Bachelor's studies	Master's studies	Follow-up Master's studies	Ph.D. studies	Total
Number of study programmes	2	0	1	7	**10**
Number of active studies in these programmes	392	0	54	156	**602**

Tab. 2.5 Accredited study programmes carried out together with a higher vocational school

BUT does not have such study programmes.

Tab. 2.6: Lifelong learning courses (LL) at the university (number of courses)

Brno University of Technology		Profession-oriented courses			Interest courses			U3V	Total
Broadly defined ISCED-F fields	code	up to 15 h	from 16 to 100 h	more than 100 h	up to 15 h	from 16 to 100 h	more than 100 h		
Programmes and qualifications – general education	00	0	0	0	0	0	0	0	0
Education and upbringing	01	3	5	7	0	0	0	0	15
Arts and humanities	02	0	0	0	0	0	0	18	18
Social sciences, journalism and information sciences	03	0	0	23	0	0	0	12	35
Business, administration and law	04	0	0	2	0	0	0	2	4
Natural sciences, mathematics and statistics	05	0	0	0	0	6	0	1	7
Information and communication technologies	06	0	0	0	0	1	0	7	8
Technology, production and construction	07	11	19	0	0	0	1	4	35
Agriculture, forestry, fishing and veterinary medicine	08	0	0	0	0	0	0	0	0
Health and social care, care for favourable living conditions	09	0	0	0	0	0	0	2	2
Services	10	0	0	0	0	0	0	0	0
TOTAL	**X**	**14**	**24**	**32**	**0**	**7**	**1**	**46**	**124**

Tab. 2.7: Lifelong learning courses (LL) at the university (number of participants)

Brno University of Technology		Profession-oriented courses			Interest courses			U3V	Total	Of which number of participants who were admitted to accredited study programmes according to § 60 of the Act on Universities
Broadly defined ISCED-F fields	code	up to 15 h	from 16 to 100 h	more than 100 h	up to 15 h	from 16 to 100 h	more than 100 h			
Programmes and qualifications – general education	00	0	0	0	0	0	0	0	0	0
Education and upbringing	01	30	189	80	0	0	0	0	299	5
Arts and humanities	02	0	0	0	0	0	0	743	743	0
Social sciences, journalism and information sciences	03	0	0	274	0	0	0	128	402	0
Business, administration and law	04	0	0	22	0	0	0	32	54	0
Natural sciences, mathematics and statistics	05	0	0	0	0	203	0	15	218	129
Information and communication technologies	06	0	0	0	0	15	0	56	71	15
Technology, production and construction	07	587	892	0	0	0	103	62	1,644	0
Agriculture, forestry, fishing and veterinary medicine	08	0	0	0	0	0	0	0	0	0
Health and social care, care for favourable living conditions	09	0	0	0	0	0	0	52	52	0
Services	10	0	0	0	0	0	0	0	0	0
TOTAL	**X**	**617**	**1,081**	**376**	**0**	**218**	**103**	**1,088**	**3,483**	**149**

Tab. 3.1: Students in accredited study programmes (number of studies)

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
Broadly defined ISCED-F fields	**code**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	
Faculty of Civil Engineering										
Natural sciences, mathematics and statistics	05	73	0	0	0	20	0	1	0	94
Technology, production and construction	07	2,227	130	0	0	854	61	142	158	3,572
Faculty total	**X**	**2,300**	**130**	**0**	**0**	**874**	**61**	**143**	**158**	**3,666**
Of which number of women at FCE	X	914	47	0	0	358	19	45	53	1,436
Of which number of foreigners at FCE	X	477	15	0	0	174	14	19	17	716
Faculty of Mechanical Engineering										
Arts and humanities	02	66	0	0	0	0	0	0	0	66
Natural sciences, mathematics and statistics	05	75	0	0	0	34	0	2	0	111
Technology, production and construction	07	2,193	87	0	0	1,054	124	236	92	3,786
Faculty total	**X**	**2,334**	**87**	**0**	**0**	**1,088**	**124**	**238**	**92**	**3,963**
Of which number of women at FME	X	212	7	0	0	183	17	33	6	458
Of which number of foreigners at FME	X	402	4	0	0	210	13	43	16	688
Faculty of Electrical Engineering and Communication Technologies										
Arts and humanities	02	127	0	0	0	0	0	0	0	127
Information and communication technologies	06	442	0	0	0	152	0	38	28	660
Technology, production and construction	07	1,429	62	0	0	556	66	139	94	2,346
Faculty total	**X**	**1,998**	**62**	**0**	**0**	**708**	**66**	**177**	**122**	**3,133**
Of which number of women at FEEC	X	219	3	0	0	109	9	30	15	385
Of which number of foreigners at Faculty of FEEC	X	561	7	0	0	175	17	50	17	827
Faculty of Architecture										
Technology, production and construction	07	321	0	0	0	139	0	42	12	514
Faculty total	**X**	**321**	**0**	**0**	**0**	**139**	**0**	**42**	**12**	**514**
Of which number of women at FA	X	203	0	0	0	83	0	22	5	313
Of which number of foreigners at FA	X	91	0	0	0	42	0	5	2	140
Faculty of Chemistry										
Natural sciences, mathematics and statistics	05	238	13	0	0	45	0	54	9	359
Technology, production and construction	07	303	27	0	0	108	17	54	14	523
Faculty total	**X**	**541**	**40**	**0**	**0**	**153**	**17**	**108**	**23**	**882**
Of which number of women at FCH	X	335	25	0	0	204	21	63	12	660
Of which number of foreigners at FCH	X	142	8	0	0	76	7	30	5	268
Faculty of Business and Management										
Social sciences, journalism and information sciences	03	0	0	0	0	181	0	0	0	181
Business, administration and law	04	1,675	0	0	0	524	178	31	22	2,430
Information and communication technologies	06	13	0	0	0	11	0	0	0	24
Faculty total	**X**	**1,688**	**0**	**0**	**0**	**716**	**178**	**31**	**22**	**2,635**
Of which number of women at FBM	X	771	0	0	0	327	98	12	8	1,216
Of which number of foreigners at FBM	X	368	0	0	0	158	19	5	5	555

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
Broadly defined ISCED-F fields	**code**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	
Faculty of Fine Arts										
Arts and humanities	02	205	0	0	0	91	0	42	12	350
Faculty total	**X**	**205**	**0**	**0**	**0**	**91**	**0**	**42**	**12**	**350**
Of which number of women at FFA	X	144	0	0	0	54	0	21	10	229
Of which number of foreigners at FFA	X	36	0	0	0	13	0	9	4	62
Faculty of Information Technology										
Information and communication technologies	06	2,040	0	0	0	464	0	69	65	2,638
Faculty total	**X**	**2,040**	**0**	**0**	**0**	**464**	**0**	**69**	**65**	**2,638**
Of which number of women at FIT	X	216	0	0	0	39	0	9	11	275
Of which number of foreigners at FIT	X	893	0	0	0	190	0	35	25	1143
Institute of Forensic Engineering										
Technology, production and construction	07	0	0	0	0	112	0	14	20	146
Services	10	0	0	0	0	37	0	0	0	37
Department total	**X**	**0**	**0**	**0**	**0**	**149**	**0**	**14**	**20**	**183**
Of which number of women at IFE	X	0	0	0	0	58	0	4	8	70
Of which number of foreigners at IFE	X	0	0	0	0	16	0	0	0	16
Centre of Sports Activities										
Technology, production and construction	07	60	0	0	0	0	0	0	0	60
Department total	**X**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**60**
Of which number of women at CESA	X	17	0	0	0	0	0	0	0	17
Of which number of foreigners at CESA	X	12	0	0	0	0	0	0	0	12
CEITEC BUT										
Technology, production and construction	07	0	0	0	0	0	0	99	14	113
Department total	**X**	**0**	**0**	**0**	**0**	**0**	**0**	**99**	**14**	**113**
Of which number of women at CEITEC BUT	X	0	0	0	0	0	0	47	7	54
Of which number of foreigners at CEITEC BUT	X	0	0	0	0	0	0	57	6	63
Brno University of Technology										
Arts and humanities	02	398	0	0	0	91	0	42	12	543
Social sciences, journalism and information sciences	03	0	0	0	0	181	0	0	0	181
Business, administration and law	04	1,675	0	0	0	524	178	31	22	2,430
Natural sciences, mathematics and statistics	05	386	13	0	0	99	0	57	9	564
Information and communication technologies	06	2,495	0	0	0	627	0	107	93	3,322
Technology, production and construction	07	6,533	306	0	0	2,823	268	726	404	11,060
Services	10	0	0	0	0	37	0	0	0	37
University TOTAL	**X**	**11,487**	**319**	**0**	**0**	**4,382**	**446**	**963**	**540**	**18,137**
Of which number of women total	X	3,031	82	0	0	1,415	164	286	135	5,113
Of which number of foreigners total	X	2,982	34	0	0	1,054	70	253	97	4,490

Tab. 3.2: Self-paying students (number of studies)

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
Broadly defined ISCED-F fields	**code**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	
Faculty of Civil Engineering										
Technology, production and construction	07	0	0	0	0	1	0	0	4	5
Faculty total	**X**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	**5**
Faculty of Mechanical Engineering										
Technology, production and construction	07	14	0	0	0	9	0	0	1	24
Faculty total	**X**	**14**	**0**	**0**	**0**	**9**	**0**	**0**	**1**	**24**
Faculty of Electrical Engineering and Communication Technologies										
Information and communication technologies	06	0	0	0	0	0	0	11	3	14
Technology, production and construction	07	4	0	0	0	18	0	0	3	25
Faculty total	**X**	**4**	**0**	**0**	**0**	**18**	**0**	**11**	**6**	**39**
Faculty of Architecture										
Technology, production and construction	07	0	0	0	0	6	0	0	0	6
Faculty total	**X**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**6**
Faculty of Chemistry										
Natural sciences, mathematics and statistics	05	0	0	0	0	0	0	1	0	1
Technology, production and construction	07	0	0	0	0	3	0	0	1	4
Faculty total	**X**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**1**	**5**
Faculty of Business and Management										
Business, administration and law	04	62	0	0	0	11	0	0	1	74
Faculty total	**X**	**62**	**0**	**0**	**0**	**11**	**0**	**0**	**1**	**74**
Faculty of Information Technology										
Information and communication technologies	06	0	0	0	0	10	0	2	2	14
Faculty total	**X**	**0**	**0**	**0**	**0**	**10**	**0**	**2**	**2**	**14**
Brno University of Technology										
Business, administration and law	04	62	0	0	0	11	0	0	1	74
Natural sciences, mathematics and statistics	05	0	0	0	0	0	0	1	0	1
Information and communication technologies	06	0	0	0	0	10	0	13	5	28
Technology, production and construction	07	18	0	0	0	37	0	0	9	64
University TOTAL	**X**	**80**	**0**	**0**	**0**	**58**	**0**	**14**	**15**	**167**

Tab. 3.3: Study failure in the 1st year of study (in %)

Brno University of Technology	Bachelor's studies			Master's studies			Follow-up Master's studies			Ph.D. studies			Total
	F	C/D	Total	F	C/D	Total	F	C/D	Total	F	C/D	Total	
Faculty of Civil Engineering	38.60	67.07	41.01				7.32	52.83	12.53	15.00	7.69	13.21	31.13
Faculty of Mechanical Engineering	40.00	73.91	42.14				8.53	30.95	11.44	11.59	20.00	12.66	29.95
Faculty of Electrical Engineering and Communication Technologies	34.87	64.81	36.32				17.55	36.90	19.69	6.67	12.77	8.76	26.92
Faculty of Architecture	20.19		20.19				4.11		4.11	11.11	0.00	6.25	12.95
Faculty of Chemistry	53.00	67.57	54.23				3.42	45.83	9.41	17.39	36.36	21.05	39.91
Faculty of Business and Management	27.87		27.87				18.32	46.10	26.14	55.56	28.57	48.00	27.58
Faculty of Fine Arts	9.84		9.84				17.95		17.95	10.00		10.00	12.73
Faculty of Information Technology	36.62		36.62				22.27		22.27	9.09	25.00	11.54	33.06
Institute of Forensic Engineering							47.47		47.47	12.50	66.67	27.27	45.45
Centre of Sports Activities	36.36		36.36										36.36
CEITEC BUT										10.71		10.71	10.71
BUT TOTAL	**36.29**	**68.60**	**37.68**				**14.52**	**41.85**	**18.12**	**12.09**	**16.11**	**13.13**	**29.72**

Tab. 3.4: Scholarships to students according to the purpose of the scholarship (numbers of natural persons)

Brno University of Technology Purose of the scholarship	Number of students	The average amount of the scholarship (CZK)
for excellent study results according to § 91 par. 2 let. a)	1,231	10,725
for excellent scientific, research, development, artistic or other creative results according to § 91 par. 2 let. b)	664	17,686
for research, development and innovation activities pursuant to a special legal regulation, § 91 par. 2 let. c)	795	50,489
in the case of a difficult social situation of the student according to § 91 par. 2 let. d)	10	20,500
in the case of a difficult social situation of the student according to § 91 par. 3	42	25,243
in cases worthy of special consideration according to § 91 par. 2 let. e)	16,698	6,423
of which accommodation scholarship	13,998	5,069
to support study abroad according to § 91 par. 4 let. a)	458	55,713
to support study in the Czech Republic according to § 91 par. 4 let. b)	20	203,358
students of doctoral study programmes according to § 91 par. 4 let. c)	1,194	96,637
other scholarships	0	0
TOTAL	**21,112**	**15,089**

Tab. 4.1: Graduates of accredited study programmes (number of completed studies)

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
Broadly defined ISCED-F fields	**code**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	
Faculty of Civil Engineering										
Technology, production and construction	07	360	9	0	0	379	14	1	27	790
Faculty total	**X**	**360**	**9**	**0**	**0**	**379**	**14**	**1**	**27**	**790**
Of which number of women at FCE	X	136	3	0	0	137	3	0	6	285
Of which number of foreigners at FCE	X	63	0	0	0	56	1	0	3	123
Faculty of Mechanical Engineering										
Technology, production and construction	07	520	17	0	0	403	30	7	12	989
Faculty total	**X**	**520**	**17**	**0**	**0**	**403**	**30**	**7**	**12**	**989**
Of which number of women at FME	X	73	0	0	0	60	6	2	2	143
Of which number of foreigners at FME	X	84	3	0	0	75	2	3	2	169
Faculty of Electrical Engineering and Communication Technologies										
Arts and humanities	02	21	0	0	0	0	0	0	0	21
Information and communication technologies	06	96	0	0	0	56	0	0	1	153
Technology, production and construction	07	222	9	0	0	187	23	2	21	464
Faculty total	**X**	**339**	**9**	**0**	**0**	**243**	**23**	**2**	**22**	**638**
Of which number of women at FEEC	X	64	1	0	0	38	1	0	5	109
Of which number of foreigners at FEEC	X	81	1	0	0	67	9	2	4	164
Faculty of Architecture										
Technology, production and construction	07	57	0	0	0	70	0	2	0	129
Faculty total	**X**	**57**	**0**	**0**	**0**	**70**	**0**	**2**	**0**	**129**
Of which number of women at FA	X	41	0	0	0	46	0	0	0	87
Of which number of foreigners at FA	X	12	0	0	0	14	0	0	0	26
Faculty of Chemistry										
Natural sciences, mathematics and statistics	05	0	0	0	0	54	0	2	1	57
Technology, production and construction	07	148	3	0	0	88	5	5	5	254
Faculty total	**X**	**148**	**3**	**0**	**0**	**142**	**5**	**7**	**6**	**311**
Of which number of women at FCH	X	111	2	0	0	100	3	2	4	222
Of which number of foreigners at FCH	X	38	0	0	0	43	1	1	0	83
Faculty of Business and Management										
Social sciences, journalism and information sciences	03	0	0	0	0	68	0	0	0	68
Business, administration and law	04	348	2	0	0	133	71	2	1	557
Information and communication technologies	06	86	0	0	0	85	0	0	0	171
Faculty total	**X**	**434**	**2**	**0**	**0**	**286**	**71**	**2**	**1**	**796**
Of which number of women at FBM	X	221	2	0	0	160	46	2	0	431
Of which number of foreigners at FBM	X	87	0	0	0	65	6	0	0	158

Brno University of Technology		Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total
Broadly defined ISCED-F fields	**code**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	**F**	**C/D**	
Faculty of Fine Arts										
Arts and humanities	02	39	0	0	0	24	0	0	0	63
Faculty total	**X**	**39**	**0**	**0**	**0**	**24**	**0**	**0**	**0**	**63**
Of which number of women at FFA	X	25	0	0	0	19	0	0	0	44
Of which number of foreigners at FFA	X	3	0	0	0	2	0	0	0	5
Faculty of Information Technology										
Information and communication technologies	06	280	0	0	0	141	0	0	12	433
Faculty total	**X**	**280**	**0**	**0**	**0**	**141**	**0**	**0**	**12**	**433**
Of which number of women at FIT	X	32	0	0	0	15	0	0	0	47
Of which number of foreigners at FIT	X	111	0	0	0	63	0	0	1	175
Institute of Forensic Engineering										
Technology, production and construction	07	0	0	0	0	38	0	0	1	39
Services	10	0	0	0	0	15	0	0	0	15
Department total	**X**	**0**	**0**	**0**	**0**	**53**	**0**	**0**	**1**	**54**
Of which number of women at IFE	X	0	0	0	0	24	0	0	0	24
Of which number of foreigners at IFE	X	0	0	0	0	3	0	0	0	3
CEITEC BUT										
Technology, production and construction	07	0	0	0	0	0	0	2	8	10
Department total	**X**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**8**	**10**
Of which number of women at CEITEC BUT	X	0	0	0	0	0	0	0	1	1
Of which number of foreigners at CEITEC BUT	X	0	0	0	0	0	0	0	5	5
Brno University of Technology										
Arts and humanities	02	60	0	0	0	24	0	0	0	84
Social sciences, journalism and information sciences	03	0	0	0	0	68	0	0	0	68
Business, administration and law	04	348	2	0	0	133	71	2	1	557
Natural sciences, mathematics and statistics	05	0	0	0	0	54	0	2	1	57
Information and communication technologies	06	462	0	0	0	282	0	0	13	757
Technology, production and construction	07	1,307	38	0	0	1,165	72	19	74	2,675
Services	10	0	0	0	0	15	0	0	0	15
University TOTAL	**X**	**2,177**	**40**	**0**	**0**	**1,741**	**143**	**23**	**89**	**4,213**
Of which total number of women	X	703	8	0	0	599	59	8	18	1,395
Of which total number of foreigners	X	479	4	0	0	388	19	6	15	911

Tab. 5.1: Interest in studying at university

Brno University of Technology		Bachelor's studies				Master's studies				Follow-up Master's studies				Ph.D. studies			
Broadly defined ISCED-F fields	code	Number or applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study	Number or applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study	Number or applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study	Number or applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study
Faculty of Civil Engineering																	
Natural sciences, mathematics and statistics	05	112	112	112	51	0	0	0	0	10	10	10	9	0	0	0	0
Technology, production and construction	07	1,647	1,655	1,576	921	0	0	0	0	628	629	624	462	57	57	52	49
Faculty total	**X**	**1,759**	**1,767**	**1,688**	**972**	**0**	**0**	**0**	**0**	**638**	**639**	**634**	**471**	**57**	**57**	**52**	**49**
Faculty of Mechanical Engineering																	
Arts and humanities	02	69	69	24	23	0	0	0	0	0	0	0	0	0	0	0	0
Natural sciences, mathematics and statistics	05	66	66	37	28	0	0	0	0	47	47	43	33	4	4	2	2
Technology, production and construction	07	1,857	1,857	1,356	1,074	0	0	0	0	957	957	732	575	76	77	70	65
Services	10	53	53	36	31	0	0	0	0	0	0	0	0	0	0	0	0
Faculty total	**X**	**2,032**	**2,045**	**1,453**	**1,156**	**0**	**0**	**0**	**0**	**1,000**	**1,004**	**775**	**608**	**80**	**81**	**72**	**67**
Faculty of Electrical Engineering and Communication Technologies																	
Arts and humanities	02	104	104	67	64	0	0	0	0	0	0	0	0	0	0	0	0
Information and communication technologies	06	395	395	189	178	0	0	0	0	130	130	109	93	21	21	9	8
Technology, production and construction	07	1,445	1,463	872	801	0	0	0	0	490	490	378	326	53	53	45	41
Faculty total	**X**	**1,936**	**1,962**	**1,128**	**1,043**	**0**	**0**	**0**	**0**	**620**	**620**	**487**	**419**	**74**	**74**	**54**	**49**
Faculty of Architecture																	
Technology, production and construction	07	468	468	204	146	0	0	0	0	136	136	116	92	13	13	11	11
Faculty total	**X**	**468**	**468**	**204**	**146**	**0**	**0**	**0**	**0**	**136**	**136**	**116**	**92**	**13**	**13**	**11**	**11**
Faculty of Chemistry																	
Natural sciences, mathematics and statistics	05	433	433	229	152	0	0	0	0	157	157	133	111	31	31	25	21
Technology, production and construction	07	381	381	217	121	0	0	0	0	101	101	80	71	12	12	10	9
Faculty total	**X**	**814**	**814**	**446**	**273**	**0**	**0**	**0**	**0**	**258**	**258**	**213**	**182**	**43**	**43**	**35**	**30**
Faculty of Business and Management																	
Social sciences, journalism and information sciences	03	0	0	0	0	0	0	0	0	169	169	93	84	0	0	0	0
Business, administration and law	04	1,678	1,696	677	667	0	0	0	0	778	778	416	370	25	25	15	15
Faculty total	**X**	**1,678**	**1,696**	**677**	**667**	**0**	**0**	**0**	**0**	**947**	**947**	**509**	**454**	**25**	**25**	**15**	**15**

Brno University of Technology		Bachelor's studies				Master's studies				Follow-up Master's studies				Ph.D. studies			
Broadly defined ISCED-F fields	code	Number of applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study	Number of applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study	Number of applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study	Number of applicants (natural persons)	Number of applications	Number of admissions	Number of enrolments for the study
Faculty of Fine Arts																	
Arts and humanities	02	626	626	87	77	0	0	0	0	71	71	49	47	24	24	13	13
Faculty total	**X**	**626**	**626**	**87**	**77**	**0**	**0**	**0**	**0**	**71**	**71**	**49**	**47**	**24**	**24**	**13**	**13**
Faculty of Information Technology																	
Information and communication technologies	06	2,063	2,063	914	909	0	0	0	0	399	399	243	224	44	44	34	34
Faculty total	**X**	**2,063**	**2,063**	**914**	**909**	**0**	**0**	**0**	**0**	**399**	**399**	**243**	**224**	**44**	**44**	**34**	**34**
Institute of Forensic Engineering																	
Technology, production and construction	07	0	0	0	0	0	0	0	0	92	92	76	64	10	10	5	4
Services	10	0	0	0	0	0	0	0	0	27	27	21	18	0	0	0	0
Department total	**X**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**119**	**119**	**97**	**82**	**10**	**10**	**5**	**4**
Centre of Sports Activities																	
Technology, production and construction	07	44	44	23	22	0	0	0	0	0	0	0	0	0	0	0	0
Department total	**X**	**44**	**44**	**23**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CEITEC BUT																	
Natural sciences, mathematics and statistics	05	0	0	0	0	0	0	0	0	0	0	0	0	64	65	47	35
Department total	**X**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**64**	**65**	**47**	**35**
Brno University of Technology																	
Arts and humanities	02	799	799	178	164	0	0	0	0	71	71	49	47	24	24	13	13
Social sciences, journalism and information sciences	03	0	0	0	0	0	0	0	0	169	169	93	84	0	0	0	0
Business, administration and law	04	1,678	1,696	677	667	0	0	0	0	778	778	416	370	25	25	15	15
Natural sciences, mathematics and statistics	05	611	611	378	231	0	0	0	0	214	214	186	153	99	100	74	58
Information and communication technologies	06	2,458	2,458	1,103	1,087	0	0	0	0	529	529	352	317	65	65	43	42
Technology, production and construction	07	5,842	5,868	4,248	3,085	0	0	0	0	2,404	2,405	2,006	1,590	221	222	193	179
Services	10	53	53	36	31	0	0	0	0	27	27	21	18	0	0	0	0
University TOTAL	**X**	**11,381**	**11,485**	**6,620**	**5,265**	**0**	**0**	**0**	**0**	**4,187**	**4,193**	**3,123**	**2,579**	**434**	**436**	**338**	**307**

Tab. 6.1: Academic and research staff and other staff, total (average numbers)

Brno University of Technology		Academic staff							Scientific and professional staff				
	Total academic staff	Professors	Associate Professors	Assistant Professors	Assistants	Lecturers	Scientific, research and development workers involved in pedagogical activities	Extraordinary professors	Postdoctoral researchers ("postdoc")	Researchers not falling into other categories	Other scientific, research and development workers	Other employees	Total employees
Faculty of Civil Engineering	300.823	33.207	71.680	153.880	41.428	0.628			4.606	18.873		201.683	525.985
of which women	80.556	3.256	8.058	52.094	17.148	0.000			1.958	4.365		110.472	197.351
Faculty of Mechanical Engineering	320.168	34.891	78.711	161.821	36.433	2.240	6.072		13.038	31.136	1.000	213.805	579.147
of which women	35.960	0.250	3.126	21.682	9.064	1.000	0.838		2.966	2.885	0.000	101.449	143.260
Faculty of Electrical Engineering and Communication Technologies	210.473	27.927	71.168	101.708	8.895	0.775			9.004	15.850		189.380	424.707
of which women	38.735	1.700	10.918	20.743	4.999	0.375			2.750	2.222		66.185	109.892
Faculty of Architecture	38.441	4.599	9.231	15.078	9.533					1.385		31.533	71.359
of which women	10.688	2.199	1.000	3.706	3.783					0.209		20.109	31.006
Faculty of Chemistry	63.106	10.741	16.862	33.018			2.485		4.914	20.813	1.000	79.860	169.693
of which women	22.767	2.000	5.730	12.637			2.400		1.247	9.144	0.000	58.277	91.435
Faculty of Business and Management	66.021	8.842	16.787	33.184	4.518	2.690			0.300	1.661		38.888	106.870
of which women	23.916	3.000	4.381	12.413	2.844	1.278			0.000	0.523		27.796	52.235
Faculty of Fine Arts	42.399	3.546	11.437	9.036	18.380					4.128		22.985	69.512
of which women	12.723	0.000	2.000	4.205	6.518					2.102		17.078	31.903
Faculty of Information Technology	59.466	7.850	18.715	30.965	1.739		0.197		6.102	13.526		142.498	221.592
of which women	2.700	0.000	1.000	1.700	0.000		0.000		0.967	0.735		61.001	65.403
Institute of Forensic Engineering	17.317	1.349	4.867	9.241	1.860					1.086		12.677	31.080
of which women	3.607	0.000	0.000	3.309	0.298					0.188		10.577	14.372
Centre of Sports Activities	15.208		2.100	6.574	6.534							17.653	32.861
of which women	7.707		1.000	3.507	3.200							12.047	19.754
CEITEC BUT	34.994			3.069			31.925		31.719	101.906	3.000	102.718	274.337
of which women	4.860			1.550			3.310		5.403	19.815	1.000	50.910	81.988
Other workplaces total	1.000			1.000								489.386	490.386
Number of women in other workplaces	0.000			0.000								304.885	304.885
TOTAL	**1,169.416**	**132.952**	**301.558**	**558.574**	**129.320**	**6.333**	**40.679**	**0.000**	**69.683**	**210.364**	**5.000**	**1,543.066**	**2,997.529**
Total of women	244.219	12.405	37.213	137.546	47.854	2.653	6.548	0.000	15.291	42.188	1.000	840.786	1,143.484

Tab. 6.2: The age structure of academic, scientific and other staff (numbers of natural persons)

Brno University of Technology	Academic staff														Scientific and professional staff						Other employees		Total	Of which women
	Professors		Associate professors		Assistant professors		Assistants		Lecturers		Scientific, research and development staff involved in pedagogical activities		Extra-ordinary professors		Postdoctoral researchers ("postdoc")		Researchers not falling into other categories		Other researchers, researchers and developers					
	total	women	total	women	total	women	total	women	total	women	total	women	total	women	total	women	total	women	total	women	total	women		
Up to 29 years					6	0	53	8	2	1	3	0			24	7	67	19			383	108	538	143
30–39 years			35	2	250	42	69	24	3	2	30	6			81	19	100	24	2		414	150	984	269
40–49 years	21	0	150	15	254	67	38	20	3	1	10	1					79	18	4	1	466	321	1,025	444
50–59 years	28	3	74	14	39	18	13	5	2	0	3	0					13	2			367	258	539	300
60–69 years	66	6	54	9	53	26	6	5	1	0	1	0					7	0			202	105	390	151
More than 70 years	51	6	38	2	17	5			1	0	1	0					14	0			46	17	168	30
TOTAL	**166**	**15**	**351**	**42**	**619**	**158**	**179**	**62**	**12**	**4**	**48**	**7**	**0**	**0**	**105**	**26**	**280**	**63**	**6**	**1**	**1,878**	**959**	**3,644**	**1,337**

Tab. 6.3: Numbers of academic and scientific staff according to the range of work load and the highest achieved qualification (numbers of natural persons according to the range of work load)

Brno University of Technology	Academic staff								Scientific staff		Total	Of whom women
Faculty of Civil Engineering												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3			4				8	3	14	2	26	5
0,31–0,5	5		3		12	3	9	6	8	3	37	12
0,51–0,7	5	1	5		18	9	5	3	6	2	39	15
0,71–1	28	3	67	8	146	49	35	8	12	3	288	71
TOTAL	**38**	**4**	**79**	**8**	**176**	**61**	**57**	**20**	**40**	**10**	**390**	**103**
Faculty of Mechanical Engineering												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3	6	1	14		1		21	1	13	2	55	4
0,31–0,5	5		6		16	6	15	6	11		53	12
0,51–0,7	4		14	1	14	4	10	2	4	1	46	8
0,71–1	30		65	3	143	15	22	5	33	5	293	28
TOTAL	**45**	**1**	**99**	**4**	**174**	**25**	**68**	**14**	**61**	**8**	**447**	**52**
Faculty of Electrical Engineering and Communication Technologies												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3	3		5		9	1			5	2	22	3
0,31–0,5	8		6				1	1	4		19	1
0,51–0,7	3	1	3		12	4	2	2	6	1	26	8
0,71–1	22	1	65	11	91	18	10	4	13	3	201	37
TOTAL	**36**	**2**	**79**	**11**	**112**	**23**	**13**	**7**	**28**	**6**	**268**	**49**
Faculty of Architecture												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3			1				3	1	1	1	5	2
0,31–0,5	2	1	1		1		5	1			9	2
0,51–0,7			1		2		3	2			6	2
0,71–1	4	2	8	1	13	3	5	2	1		31	8
TOTAL	**6**	**3**	**11**	**1**	**16**	**3**	**16**	**6**	**2**	**1**	**51**	**14**

Brno University of Technology	Academic staff								Scientific staff		Total	Of whom women
Faculty of Chemistry												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3	1				2	1			13	3	16	4
0,31–0,5	1		1	1	4	2			4	4	10	7
0,51–0,7	1		2	1	2	1	2	1	8	1	15	4
0,71–1	10	2	17	6	24	9	2	2	19	9	72	28
TOTAL	**13**	**2**	**20**	**8**	**32**	**13**	**4**	**3**	**44**	**17**	**113**	**43**
Faculty of Business and Management												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3	2				3	2	1	1	1		7	3
0,31–0,5	2		1	1	5	2	4	3			12	6
0,51–0,7	2		1								3	0
0,71–1	7	3	17	5	28	9	6	3			58	20
TOTAL	**13**	**3**	**19**	**6**	**36**	**13**	**11**	**7**	**1**	**0**	**80**	**29**
Faculty of Fine Arts												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3							4	2	2	1	6	3
0,31–0,5			1		4	3	1	1			6	4
0,51–0,7	1		1		1	1	1		2	1	6	2
0,71–1	3		11	2	7	2	17	6	2	1	40	11
TOTAL	**4**	**0**	**13**	**2**	**12**	**6**	**23**	**9**	**6**	**3**	**58**	**20**
Faculty of Information Technology												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3					4	1			4		8	1
0,31–0,5	1		1		4	1			4	2	10	3
0,51–0,7	1		4		3		2		2	1	12	1
0,71–1	7		18	1	25	1	1		14		65	2
TOTAL	**9**	**0**	**23**	**1**	**36**	**3**	**3**	**0**	**24**	**3**	**95**	**7**

Brno University of Technology	Academic staff								Scientific staff		Total	Of whom women
Institute of Forensic Engineering												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3					2	1			2		4	1
0,31–0,5	1		1		1	1			1		4	1
0,51–0,7					1						1	0
0,71–1	1		4		7	2	1				13	2
TOTAL	**2**	**0**	**5**	**0**	**11**	**4**	**1**	**0**	**3**	**0**	**22**	**4**
Centre of Sports Activities												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3			1		3	2	1	1			5	3
0,31–0,5							1				1	0
0,51–0,7											0	0
0,71–1			2	1	6	3	6	3			14	7
TOTAL	**0**	**0**	**3**	**1**	**9**	**5**	**8**	**4**	**0**	**0**	**20**	**10**
CEITEC BUT												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3					1				43	14	44	14
0,31–0,5					4	1			26	8	30	9
0,51–0,7					5	1			27	3	32	4
0,71–1					29	3			86	17	115	20
TOTAL	**0**	**0**	**0**	**0**	**39**	**5**	**0**	**0**	**182**	**42**	**221**	**47**
Other workplaces, total												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3											0	0
0,31–0,5											0	0
0,51–0,7											0	0
0,71–1					1						1	0
TOTAL	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Brno University of Technology	Academic staff								Scientific staff		Total	Of whom women
Brno University of Technology												
Range of work load	**prof.**		**assoc. prof.**		**DrSc., CSc., Dr., Ph.D., Th.D.**		**others**					
	total	**women**	**total**	**women**	**total**	**women**	**total**	**women**	**total**	**women**		
Up to 0,3	12	1	25	0	25	8	38	9	98	25	198	43
0,31–0,5	25	1	21	2	51	19	36	18	58	17	191	57
0,51–0,7	17	2	31	2	58	20	25	10	55	10	186	44
0,71–1	112	11	274	38	520	114	105	33	180	38	1,191	234
TOTAL	**166**	**15**	**351**	**42**	**654**	**161**	**204**	**70**	**391**	**90**	**1,766**	**378**
University TOTAL	**166**	**15**	**351**	**42**	**654**	**161**	**204**	**70**	**391**	**90**	**1,766**	**378**

Tab. 6.4: Leading personnel (natural persons)

Brno University of Technology	Rector/Dean	Vice-Rector/Vice-Dean	Academic Senate	Scientific/Artistic/ Academic Council	Quaestor/Secretary	Board of Directors	Director of an institute, university agricultural or forest farm	Head of department/ institute/research facility	Leading personnel total
Rectorate	1	5	27	46	1	15			**95**
Of whom women	0	1	9	4	0	2			**16**
Faculty of Civil Engineering	1	5	40	47	1			22	**116**
Of whom women	0	0	11	7	0			3	**21**
Faculty of Mechanical Engineering	1	4	36	36	1			14	**92**
Of whom women	0	0	6	0	0			1	**7**
Faculty of Electrical Engineering and Communication Technologies	1	4	19	32	1			14	**71**
Of whom women	0	1	4	2	0			0	**7**
Faculty of Architecture	1	4	13	20	1			8	**47**
Of whom women	0	0	5	6	0			1	**12**
Faculty of Chemistry	1	4	15	32	1			5	**58**
Of whom women	0	2	5	6	0			1	**14**
Faculty of Business and Management	1	4	21	27	1			4	**58**
Of whom women	0	0	9	7	0			1	**17**
Faculty of Fine Arts	1	5	11	21	1			21	**60**
Of whom women	0	3	4	8	1			7	**23**
Faculty of Information Technology	1	5	13	32	1			5	**57**
Of whom women	0	0	2	3	0			0	**5**
IFE, CEITEC BUT and CESA				40	2		3	14	**59**
Of whom women				3	0		1	1	**5**

Brno University of Technology	Rector/Dean	Vice-Rector/Vice-Dean	Academic Senate	Scientific/Artistic/ Academic Council	Quaestor/Secretary	Board of Directors	Director of an institute, university agricultural or forest farm	Head of department/ institute/research facility	Leading personnel total
Other workplaces, total				0	0		5	0	**5**
Of whom women				0	0		3	0	**3**
Faculties, university institutes and other workplaces, total	8	35	168	287	10		8	107	**623**
Of whom women	0	6	46	42	1		4	15	**114**
University TOTAL	**9**	**40**	**195**	**333**	**11**	**15**	**8**	**107**	**718**
Of whom women	0	7	55	46	1	2	4	15	**130**

Tab. 6.5: Academic and research staff with foreign citizenship (recalculated average numbers)

Brno University of Technology	Academic staff						Scientific and professional staff			Other employees
	Professors	Associate professors	Assistant professors	Assistants	Lectureres	Scientific. research and development workers involved in pedagogical activities	Postdoctoral students ("postdoc")	Researchers not falling into other categories	Other scientific. research and development workers	
Faculty of Civil Engineering	0.500	1.000	3.501	2.922	0.000	0.000	0.689	3.707	0.000	2.675
of which: Germany								0.185		
Poland										
Austria								0.253		0.140
Slovakia	0.500	1.000	3.501	0.922			0.689	2.867		1.868
Other EU states								0.252		
Other states outside EU				2.000				0.150		0.667
Women from the total number (regardless of citizenship)			0.600	0.629			0.186	1.697		1.786
Faculty of Mechanical Engineering	0.000	0.150	5.954	4.452	0.151	0.000	4.438	8.641	0.000	9.348
of which: Germany										
Poland										
Austria		0.150								
Slovakia			4.954	3.753			1.755	1.008		7.040
Other EU states								1.000		0.540
Other states outside EU			1.000	0.699	0.151		2.683	6.633		1.768
Women from the total number (regardless of citizenship)			1.000	0.999	0.151		1.350	2.223		3.255

Brno University of Technology	Academic staff						Scientific and professional staff			Other employees
	Professors	Associate professors	Assistant professors	Assistants	Lectureres	Scientific. research and development workers involved in pedagogical activities	Postdoctoral students ("postdoc")	Researchers not falling into other categories	Other scientific. research and development workers	
Faculty of Electrical Engineering and Communication Technologies	0.000	3.041	6.603	0.000	0.000	0.000	2.929	4.700	0.000	12.325
of which: Germany										1.000
Poland								1.000		
Austria										
Slovakia		3.041	4.603				0.580	1.000		8.021
Other EU states							0.550	1.200		
Other states outside EU			2.000				1.799	1.500		3.304
Women from the total number (regardless of citizenship)		1.000	1.000				2.001	2.500		3.182
Faculty of Architecture	0.367	0.000	0.000	0.900	0.000	0.000	0.000	0.000	0.000	0.000
of which: Germany										
Poland				0.750						
Austria										
Slovakia	0.367									
Other EU states				0.150						
Other states outside EU										
Women from the total number (regardless of citizenship)	0.367			0.150						
Faculty of Chemistry	0.000	2.034	1.000	0.000	0.000	0.085	1.250	2.361	0.000	2.272
of which: Germany										
Poland										
Austria										
Slovakia		2.034	1.000				1.250	0.629		2.272
Other EU states								1.000		
Other states outside EU						0.085		0.732		
Women from the total number (regardless of citizenship)		1.000	1.000				0.200	1.354		1.766
Faculty of Business and Management	0.250	0.750	1.000	1.000	0.000	0.000	0.000	2.000	0.000	0.129
of which: Germany										
Poland										
Austria										
Slovakia	0.250		1.000							
Other EU states										
Other states outside EU		0.750		1.000				2.000		0.129
Women from the total number (regardless of citizenship)			1.000	1.000				1.000		0.129

Brno University of Technology	Academic staff						Scientific and professional staff			Other employees
	Professors	Associate professors	Assistant professors	Assistants	Lectureres	Scientific. research and development workers involved in pedagogical activities	Postdoctoral students ("postdoc")	Researchers not falling into other categories	Other scientific. research and development workers	
Faculty of Fine Arts	0.000	1.000	2.521	1.998	0.000	0.000	0.000	2.381	0.000	0.000
of which: Germany								0.252		
Poland										
Austria										
Slovakia		1.000	1.435	0.584				2.129		
Other EU states			0.586	1.414						
Other states outside EU			0.500							
Women from the total number (regardless of citizenship)			1.935	1.334				2.052		
Faculty of Information Technology	0.000	1.000	1.438	0.000	0.000	0.197	0.552	1.830	0.000	19.099
of which: Germany										
Poland										1.000
Austria										
Slovakia		1.000	0.438					1.249		11.479
Other EU states			1.000				0.552			0.247
Other states outside EU						0.197		0.581		6.373
Women from the total number (regardless of citizenship)							0.085	0.967		2.957
Institute of Forensic Engineering	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.176	0.000	0.000
of which: Germany										
Poland										
Austria										
Slovakia			1.000					0.176		
Other EU states										
Other states outside EU										
Women from the total number (regardless of citizenship)								0.176		
Centre of Sports Activities	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	2.000
of which: Germany										
Poland										
Austria										
Slovakia				1.000						2.000
Other EU states										
Other states outside EU										
Women from the total number (regardless of citizenship)										1.000

Brno University of Technology	Academic staff						Scientific and professional staff			Other employees
	Professors	Associate professors	Assistant professors	Assistants	Lectureres	Scientific. research and development workers involved in pedagogical activities	Postdoctoral students ("postdoc")	Researchers not falling into other categories	Other scientific. research and development workers	
CEITEC BUT	0.000	0.000	0.684	0.000	0.000	16.056	13.419	11.237	0.000	16.367
of which: Germany						1.000		0.334		0.150
Poland						2.000				
Austria						1.500				
Slovakia			0.500			3.456	0.214	2.620		9.024
Other EU states						1.100	5.225	3.583		0.873
Other states outside EU			0.184			7.000	7.980	4.700		6.320
Women from the total number (regardless of citizenship)			0.584			3.000	1.830	4.310		5.770
Other workplaces in total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.853
of which: Germany										
Poland										
Austria										
Slovakia										4.666
Other EU states										
Other states outside EU										0.187
Women from the total number (regardless of citizenship)										1.025
University TOTAL	**1.117**	**8.975**	**23.701**	**12.272**	**0.151**	**16.338**	**23.277**	**37.033**	**0.000**	**69.068**
of which: Germany	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.771	0.000	1.150
Poland	0.000	0.000	0.000	0.750	0.000	2.000	0.000	1.000	0.000	1.000
Austria	0.000	0.150	0.000	0.000	0.000	1.500	0.000	0.253	0.000	0.140
Slovakia	1.117	8.075	18.431	6.259	0.000	3.456	4.488	11.678	0.000	46.370
Other EU states	0.000	0.000	1.586	1.564	0.000	1.100	6.327	7.035	0.000	1.660
Other states outside EU	0.000	0.750	3.684	3.699	0.151	7.282	12.462	16.296	0.000	18.748
Women from the total number (regardless of citizenship)	0.367	2.000	7.119	4.112	0.151	3.000	5.652	16.279	0.000	20.870

Tab. 6.6: Newly appointed associate professors and professors (numbers)

Brno University of Technology	Number			Age average of newly appointed
	At this university		Own university employees appointed at other universities	
	total	of which regular employees of the university		
Faculty of Civil Engineering				
Professors appointed in 2021	1	1	0	48.02
of which women	0	0	0	
Associate professors appointed in 2021	4	4	0	44.97
of which women	0	0	0	
Faculty of Mechanical Engineering				
Professors appointed in 2021	0	0	0	
of which women	0	0	0	
Associate professors appointed in 2021	6	6	0	37.35
of which women	0	0	0	
Faculty of Electrical Engineering and Communication Technologies				
Professors appointed in 2021	4	4	0	46.40
of which women	0	0	0	
Associate professors appointed in 2021	5	5	0	40.07
of which women	1	1	0	32.89
Faculty of Architecture				
Professors appointed in 2021	0	0	0	
of which women	0	0	0	
Associate professors appointed in 2021	1	0	0	62.92
of which women	1	0	0	62.92
Faculty of Chemistry				
Professors appointed in 2021	2	2	1	49.54
of which women	0	0	0	
Associate professors appointed in 2021	4	4	0	45.58
of which women	2	2	0	54.43
Faculty of Business and Management				
Professors appointed in 2021	1	1	0	46.20
of which women	0	0	0	
Associate professors appointed in 2021	2	1	1	45.25
of which women	2	1	0	45.25
Faculty of Fine Arts				
Professors appointed in 2021	0	0	0	
of which women	0	0	0	
Associate professors appointed in 2021	2	1	0	49.94
of which women	0	0	0	
Faculty of Information Technology				
Professors appointed in 2021	1	1	0	51.50
of which women	0	0	0	
Associate professors appointed in 2021	3	3	0	40.23
of which women	0	0	0	

Brno University of Technology	Number			Age average of newly appointed
	At this university		Own university employees appointed at other universities	
	total	of which regular employees of the university		
Institute of Forensic Engineering				
Professors appointed in 2021	0	0	0	
of which women	0	0	0	
Associate professors appointed in 2021	0	0	0	
of which women	0	0	0	
TOTAL professors	**9**	**9**	**1**	**47.82**
of which women	0	0	0	
TOTAL associate professors	**27**	**24**	**1**	**42.99**
of which women	6	4	0	49.19

Tab. 7.1: Involvement of the university in international cooperation programmes (regardless of the source of funding)

Brno University of Technology	H2021/7th EC Framework Programmes		Others	Total
	total	of which Marie-Curie Actions		
Number of projects	53	10	100	**153**
Number of students sent	2	2	329	**331**
Number of students admitted	2	2	334	**336**
Number of academic and scientific staff sent	18	0	182	**200**
Number of admitted academic and scientific staff	12	6	191	**203**
Subsidies in thous. CZK	682,381.81	53,140.85	557,804.31	**1,240,186.12**

Tab. 7.2: Mobility of students, academicians and other staff with regards country (regardless of the source of funding)

Brno University of Technology	Number of students sent			Number of students admitted		Number of academic scientific staff sent	Number of admitted academic staff	Number of other workers sent	Number of other workers admitted	Total for the states
Country	total	of which graduate internships	of which on-line	of which on-line	total					
Australia	1	0	0	0	0	0	0	0	0	**1**
Austria	41	3	0	0	10	4	0	1	0	**56**
Belgium	10	0	0	0	6	0	0	0	0	**16**
Bosnia and Herzegovina	0	0	0	0	5	0	0	0	0	**5**
Brazil	1	0	0	0	0	0	0	0	0	**1**
Bulgaria	0	0	0	0	3	0	0	1	0	**4**
Canada	4	0	0	0	0	0	0	0	0	**4**
People's Republic of China	0	0	0	0	1	0	0	0	0	**1**
Republic of China (Taiwan)	0	0	0	0	7	0	0	0	0	**7**
Congo	1	0	0	0	0	0	0	0	0	**1**
Croatia	1	0	0	0	2	0	0	0	0	**3**
Cyprus	0	0	0	0	0	1	0	4	0	**5**
Denmark	12	0	1	0	2	0	0	0	0	**14**
Estonia	14	0	0	0	4	0	0	1	0	**19**
Finland	13	0	0	0	1	0	0	0	0	**14**
France	15	1	0	0	70	1	0	0	0	**86**
Germany	30	2	0	0	21	1	0	0	0	**52**
Greece	4	0	0	0	12	1	0	0	0	**17**
Hungary	2	0	0	0	1	0	0	0	0	**3**
Iceland	5	0	0	0	0	2	0	0	0	**7**
Ireland	6	0	0	0	1	1	0	1	0	**9**
Italy	13	2	0	0	25	3	0	3	0	**44**
Republic of Korea	9	0	0	0	2	0	0	0	0	**11**
Latvia	6	1	0	0	6	0	0	0	0	**12**
Lithuania	8	1	1	0	22	1	0	0	0	**31**
Malta	6	0	0	0	3	2	0	7	0	**18**
Mexico	1	0	0	0	1	0	0	0	0	**2**
The Netherlands	15	6	1	0	2	0	0	0	0	**17**
Norway	16	0	0	0	1	0	0	0	0	**17**
Poland	7	0	0	0	17	2	0	0	0	**26**
Portugal	30	2	1	0	26	0	0	0	0	**56**
Romania	1	1	0	0	2	0	0	0	0	**3**
Russian Federation	1	0	0	0	0	0	0	0	0	**1**
Serbia	2	1	0	0	4	0	0	0	0	**6**
Slovakia	11	1	0	0	15	0	0	0	0	**26**
Slovenia	21	1	2	0	5	2	0	0	0	**28**
Spain	25	3	0	0	65	0	0	4	0	**94**
Sweden	12	2	0	0	0	0	0	0	0	**12**
Switzerland	5	0	0	0	4	0	0	0	0	**9**

Brno University of Technology	Number of students sent			Number of students admitted		Number of academic scientific staff sent	Number of admitted academic staff	Number of other workers sent	Number of other workers admitted	Total for the states
Country	total	of which graduate internships	of which on-line	of which on-line	total					
Thailand	1	0	0	0	0	0	0	0	0	**1**
Turkey	1	0	0	0	32	0	0	0	0	**33**
United Kingdom	10	0	0	0	0	0	0	1	0	**11**
United States of America	28	0	0	0	0	0	0	0	0	**28**
Total	**389**	**27**	**6**	**0**	**378**	**21**	**0**	**23**	**0**	**811**

Tab. 7.3: Mobility of graduates (numbers and shares of completed studies)

Brno University of Technology	Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total	
	proportion	number	proportion	number	proportion	number	proportion	number	proportion	number
Faculty of Civil Engineering										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	5.1%	19			6.1%	24	40.0%	12	**6.9%**	**55**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							40.0%	12	**40.0%**	**12**
Faculty of Mechanical Engineering										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	0.9%	5			17.6%	76	26.9%	7	**8.8%**	**88**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							26.9%	7	**26.9%**	**7**
Faculty of Electrical Engineering and Communication Technologies										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	1.4%	5			9.0%	24	32.0%	8	**5.8%**	**37**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							28.0%	7	**28.0%**	**7**

Brno University of Technology	Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total	
	proportion	number	proportion	number	proportion	number	proportion	number	proportion	number
Faculty of Architecture										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	29.82%	17			34.3%	24	50.0%	1	**32.6%**	**42**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							0.0%	0	**0.0%**	**0**
Faculty of Chemistry										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	0.0%	0			13.6%	20	61.5%	8	**9.0%**	**28**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							61.5%	8	**61.5%**	**8**
Faculty of Business and Management										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	3.4%	15			9.0%	32	100.0%	3	**6.3%**	**50**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							100.0%	3	**100.0%**	**3**
Faculty of Fine Arts										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	25.6%	10			37.5%	9			**30.2%**	**19**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							0.0%	0		
Faculty of Information Technology										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	3.6%	10			17.7%	25	13.3%	2	**8.5%**	**37**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							6.7%	1	**6.7%**	**1**
Institute of Forensic Engineering										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies					3.8%	2	100.0%	1	**5.6%**	**3**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							0.0%	0		

Brno University of Technology	Bachelor's studies		Master's studies		Follow-up Master's studies		Ph.D. studies		Total	
	proportion	number	proportion	number	proportion	number	proportion	number	proportion	number
CEITEC BUT										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies							46.2%	6	**46.2%**	**6**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							46.2%	6	**46.2%**	**6**
Brno University of Technology										
Proportion [%] and number of graduates who went on a stay abroad for at least 14 days during their studies	3.7%	81			12.5%	236	37.5%	48	**8.6%**	**365**
Proportion [%] and number of doctoral graduates with a length of stay abroad of at least 1 month (i.e. 30 days)							34.4%	44	**34.4%**	**44**
Brno University of Technology	**3.7%**	**81**	**0.0%**	**0.0**	**12.5%**	**236**				

Tab. 8.1: Conferences (co-)organized by the university (numbers)

Brno University of Technology	With the number of participants greater than 60		International conference	
	physical	virtual	physical	virtual
Faculty of Civil Engineering	6	1	0	1
Faculty of Mechanical Engineering	1	2	2	3
Faculty of Electrical Engineering and Communication Technologies	1	1	1	3
Faculty of Architecture	0	0	1	1
Faculty of Chemistry	0	3	0	1
Faculty of Business and Management	0	0	0	1
Faculty of Fine Arts	1	0	1	0
Faculty of Information Technology	2	2	1	0
Institute of Forensic Engineering	1	0	1	1
Centre of Sports Activities	0	0	0	0
CEITEC BUT	0	0	0	4
TOTAL	**12**	**9**	**7**	**15**

Tab. 8.2: Experts from the application sphere participating in teaching and practice in accredited study programmes (numbers)

Brno University of Technology	Persons having an employment relationship with the university or part of the university			Persons not having an employment relationship with the university or part of the university		
	Number of persons participating in teaching	Number of persons involved in the supervision of the final thesis	Number of persons involved in providing internships	Number of persons participating in teaching	Number of persons involved in the supervision of the final thesis	Number of persons involved in providing internships
Faculty of Civil Engineering	40	4	1	12	6	107
of which women	14	1	0	2	1	4
Faculty of Mechanical Engineering	0	0	0	23	121	36
of which women	0	0	0	3	9	3
Faculty of Electrical Engineering and Communication Technologies	8	2	2	28	26	31
of which women	0	0	0	0	1	2
Faculty of Architecture	24	16	3	6	0	59
of which women	4	2	1	2	0	3
Faculty of Chemistry	16	3	0	6	28	44
of which women	2	1	0	1	7	10
Faculty of Business and Management	7	1	1	15	0	150
of which women	1	0	0	3	0	70
Faculty of Fine Arts	12	8	0	0	0	0
of which women	4	3	0	0	0	0
Faculty of Information Technology	0	0	0	11	54	0
of which women	0	0	0	1	6	0
Institute of Forensic Engineering	12	2	1	2	0	0
of which women	1	0	0	0	0	0
Centre of Sports Activities	9	0	4	0	0	28
of which women	3	0	0	0	0	2
CEITEC BUT	0	0	0	0	0	0
of which women	0	0	0	0	0	0
TOTAL	**128**	**36**	**12**	**103**	**235**	**455**
of which women	29	7	1	12	24	94

Tab. 8.3: Fields of study/programmes which, in their content, have compulsory completion of professional practice for a period of at least 1 month (numbers)

Brno University of Technology	Number of fields of study/ programmes	Number of active studies					
		Bachelor's studies		Master's studies		Follow-up Master's studies	
		Academic profile	Profes-sional profile	Academic profile	Profes-sional profile	Academic profile	Profes-sional profile
Faculty of Civil Engineering	4	504				123	
Faculty of Mechanical Engineering	1		40				
Faculty of Electrical Engineering and Communication Technologies	1	189					
Faculty of Architecture	2		193				128
Faculty of Chemistry	1		28				
Faculty of Business and Management	5	1,135	502				
Centre of Sports Activities	1		54				
TOTAL	**15**	**1,828**	**817**			**123**	**128**

Tab. 8.4: Transfer of knowledge and research results into practice

Brno University of Technology	In the Czech Republic	Abroad	Total number	Total revenue
Number of new spin-offs/start-ups			**3**	
Patent applications filed	4	5	**9**	
Granted patents	12	6	**18**	
Registered utility models	30	0	**30**	
License agreements valid as of December 31	38	47	**85**	
Newly concluded license agreements	5	13	**18**	**1,385,645 CZK**
Contract research, consultations and consultancy services			**1,111**	**155,438,073 CZK**
Paid training courses for employees of application spheres			**39**	**2,878,013 CZK**

Summary information on tab. 8.4

	Total number	Total revenue	Average revenue per 1 order
Newly concluded license agreements, contract research, consultations, consultancy services and paid training courses for employees of the application sphere	1,168	159,701,731 CZK	136,731 CZK

Tab. 12.1: Accommodation, meals

Brno University of Technology	Number
Total bed capacity of university dormitories	6,339
Number of beds in rented facilities	0
Number of submitted applications/reservations for accommodation as of 31/12/2021	2,650/3,003
Number of positively processed applications/reservations for accommodation as of 31/12/2021	3,336/3,003
Number of bed days in 2021	1,361,813
Total number of terminated contracts (pandemics)	0
Total number of modified contracts (pandemics)	2,368
Total number of contracts with exception (pandemics)	0
Number of main meals issued to students in 2021	310,025
Number of main meals issued in 2021 to university staff	52,506
Number of main meals served in 2021 to other diners	25,760

Tab. 12.2: University libraries

Brno University of Technology	Number
Increase in library stock per year	6,576
of which increase in physical units	6,270
of which an increase in e-books in permanent purchase	306
Total library collection	240,475
of which physical units	238,254
of which e-books in permanent purchase	2,221
Number of subscribed periodical titles:	
physically	525
electronically (estimation)	100
in both forms	10

14 Conclusions

On the previous pages of the annual activity report, we had the opportunity to get acquainted with how we at the university managed to meet our goals in 2021. At the time of preparing this annual report, we already know the events and affairs of early 2022. The term of the new management of our university began in February. Although the university faces many challenges in 2022, we cannot fail to mention an event that no one in the civilised world expected, and which in 2022 will undoubtedly affect the life of our university and probably change our current view of the world and the values we recognise. Following the COVID-19 pandemic of the previous two years, the whole world has received incredible news of Russia's unprecedented aggression in the territory of a sovereign state – Ukraine.

In connection with the situation in Ukraine and its development, our university adopts a fundamental position based on the rejection of Russia's aggression on the territory of a sovereign state, and expresses its deep commitment to the Ukrainian people in their struggle for freedom and independence. The University condemns the perversion of Russia's action in the war in Ukraine and evaluates the actions of Russian representatives as a ruthless manifestation of self-centred nationalism, which has denied all the principles of international law, democracy and humanity.

As a centre of education based on the principles of democracy and freedom, our university is aware of its responsibility to defend the values on which the democratic world is built. In this situation, it considers it its duty to provide support to those in need who, in the face of the war in Ukraine, seek safety in the Czech Republic. The university clearly supports the state leadership and the measures it adopts. In cooperation with the state, the region and the city of Brno, as well as partner universities in Brno and other institutions and organisations, it is ready to offer support to all those who request it. To do this, it is ready to use its own resources and capacities within the limits of their availability.

In this context, it is clear that the macroeconomic situation in 2021 has already begun to show signs of economic recession accompanied by, for example, fluctuations in the financial markets and the energy crisis and collapse of the energy market in the Czech Republic. This necessarily leads us to think about the future. Despite this situation, the coming period is a period full of expectations and challenges for our university. Key words before the invasion of Ukraine were the healing of nature, sustainability and quality of life, green energy, renewables, hydrogen technologies, the circular economy, the Green Deal, etc. After the invasion, these topics have changed and the term Green Deal gets a fundamentally different charge. The year 2022 will undoubtedly be accompanied by the topic of humanitarian support for the needy from Ukraine, the offer of study opportunities for Ukrainian students and job opportunities for academics and researchers or other newcomers from Ukraine. However, even these unfavourable conditions, which will accompany us alongside the still looming COVID-19 pandemic, must not restrict the university on the path to fulfilling its mission and progressing towards the realisation of its visions.

The time of great challenges is coming for us. Who other than technical colleges and technical research are able to bring technological solutions related to the social priorities of the time? It is a time of opportunities for our technical university. At the end of 2021, the calls of the National Renewal Programme were announced, a new Jan Amos Komenský Operational Programme was being prepared, and a call was issued by the TA CR for new National Competence Centres.

I am convinced that we will be able to overcome a not very easy start. Changes await us, consisting in strengthening the internationalisation of our university, the need to open up to the world. This means crossing not only spatial but also temporal boundaries. The Czech Republic will take over the presidency of the Council of the EU in the second half of the year, which brings with it topics and challenges for Czech universities in the field of education and research. The concept of national universities has become obsolete. The concept of building international university alliances as a network of university cooperation in the formation of a global higher education area is being promoted. The key words are the development of multiple-degree programmes, the creation of European joint-degrees and the development of the European quality assurance system EQAA. There is a need to address the recognition of foreign education and the need to develop vocational and lifelong learning in response to changes in the labour market, the economy and the speed of technological and social development. Another feature of the time is the call for the development of flexible and open forms of education, particularly in response to pandemic experiences. Our university also faces these challenges in the field of education.

In the field of research, we then face the need to prepare the university for further evaluations, according to the results of which we will be rated, and we must strive to achieve the highest level of evaluation. Together with other universities, we want to strive to complete the evaluation methodology known as M17+ and to promote proper valuation of applied research results, which are so typical for technical universities and which are incidentally expected solutions to these trends of the times, hidden behind terms such as Green Deal, etc. We can only hope that the Green Deal will not be taken for granted in connection with the current geopolitical situation and the energy crisis caused by it. But even so, it remains a challenge for technical applications, which as a result of research at technical universities can bring solutions for the future. We therefore need to encourage the transfer of knowledge and the motivation for it.

In 2022, we will also undergo an evaluation by the European University Association. We thus have a period of great opportunities ahead of us. Let's grasp them and turn them into results that show that technical education, research and its applications are the future of our society and the world.

Assoc. prof. Ing. Ladislav Janíček, Ph.D., MBA, LL.M.
Rector of BUT

15 List of the abbreviations used

CC	BUT Career Centre
CEITEC	Central European Institute of Technology
CIS	BUT Computer and Information Services Centre
CSF	Czech Science Foundation
CTU	Czech Technical University in Prague
CULS	Czech University of Life Sciences
DFKI	Deutsches Forschungszentrum für Künstliche Intelligenz (German Research Center for Artificial Intelligence)
FA	Faculty of Architecture, BUT
FBM	Faculty of Business Administration, BUT
FCE	Faculty of Civil Engineering BUT
FEEC	Faculty of Electrical Engineering and Communication, BUT
FFA	Faculty of Fine Arts, BUT
FCH	Faculty of Chemistry, BUT
FIT	Faculty of Information Technology, BUT
FME	Faculty of Mechanical Engineering, BUT
HR Award	Human Resources Award
IAESTE	International Association for the Exchange of Students for Technical Experience
IEP	International Evaluation Panel
IFE	Institute of Forensic Engineering, BUT
ILL	Institute of Lifelong Learning, BUT
JCMM	South Moravian Centre for International Mobility
JIC	South Moravian Innovation Centre
MENDELU	Mendel University in Brno
MEYS	Ministry of Education, Youth and Sports
MI	Ministry of the Interior
MIT	Ministry of Industry and Trade
MUNI	Masaryk University
NAO	National Accreditation Office
OP RDE	Operational Programme Research, Development and Education
RVŠ	The Council of Higher Education Institutions
SHAP	Academic Staff Evaluation System
SKAS	Student Chamber of the Academic Senate BUT
TA CR	Technology Agency of the Czech Republic
TUL	Technical University of Liberec
TUO	Technical University of Ostrava
UE	University of Economics in Prague
UWB	University of West Bohemia in Pilsen
WoS	Web of Science
ZeMA	Zentrum für Mechatronik und Automatisierungstechnik (German Research Centre for Automation and Mechatronics)

BRNO UNIVERSITY OF TECHNOLOGY

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