ANNUAL REPORT ON ACTIVITIES 2018

CTU

CZECH TECHNICAL UNIVERSITY IN PRAGUE

Annual Report
on Activities of CTU in Prague in 2018

Prague, June 2019

Czech Technical University in Prague, 2019
Annual Report on Activities of CTU in Prague in 2018

Compiled by an editorial team led by Vice-Rector doc. Ing. arch. Petr Kordovský

Photo: Jiří Ryszawy, CIC CTU and archives of faculties

Contents

Introduction by the Rector

We try to connect best of what we can do with current needs of state

The Rector of the Czech Technical University in Prague, doc. RNDr. Vojtěch Petráček, CSc., discusses strategic projects and visions.

Science is key to a university, bringing a school prestige and finances when successful. In your view, which of the outlined visions for future projects to be undertaken at CTU in the coming decades, or further into the future, are the most needed from the perspective of science and benefit to our lives?
When we in the Rector's Collegium were weighing up which project visions to put forward for strategic screening by the Ministry of Education, Youth and Sports, we did our best to bring together a number of perspectives: the perspective of strategic importance from the viewpoint of the state, and the perspective of capitalising on our strengths to fulfil an objective of strategic importance for the state and efforts to make the university more connected. In the Collegium, we together chose a group of ideas from among the elements proposed, and these have given rise to noteworthy projects. This approach also demonstrates that the selected themes do indeed correspond to the key problems of the state; they're not oriented solely toward the development of pure science. We are trying to connect the best of what we can do with the current needs of the state. Therefore, an overview of proposed themes is not identical to a list of our strengths in research. It's not easy to answer your question, but I believe that for our lives the most notable subjects will be developing artificial intelligence and machine learning, while from the perspective of science the most important thing will be light technology for the 21st century, combining advanced physical and chemical research that draws on the country's largest scientific infrastructure, ELI Beamlines. Among other things, that research should lead to the creation of a new generation nuclear fuels.

These projects have one thing in common: they are not the isolated research of a narrow circle of specialists in one field. For the most part, they anticipate close cooperation among a number of CTU faculties and institutes. Is this, then, the cross-CTU synergy that you pledged to support when you assumed the rector's chair? In that regard, are you satisfied with the manner in which the scientific challenges are developing?
The projects proposed within the framework of the strategic screening genuinely do anticipate the cooperation of multiple sections. They therefore contribute to an important issue you raised – cross-CTU interconnectivity. Synergy is highly important and is making headway, though we certainly haven't got there yet. We are still continuously running into nonsensical obstacles that block or complicate full cooperation. I'm glad that such situations have been reduced considerably and we're working on the resolution of those that remain. In general terms, I'm content with the progress in interconnectivity. It

Artificial intelligence is the subject that will likely most influence our lives – either directly or via the development of advanced production technologies or in the fields of security or defence. We have to contribute to the development of AI, both on the theoretical level and in applications, and also of course in the area of training and cooperation with industry and other research bodies. At CTU we are extraordinarily strong in all these respects and complement one another.

couldn't be expected to be resolved instantly, like waving a wand.

One of the strategic projects being considered, whose guarantor is the Dean of the Faculty of Information Technology, doc. Jiřina, has the working title Centre for Artificial Intelligence and Machine Learning. It is, therefore, focused on the field you referred to as the most important for our lives and which a number of constituent parts of CTU are focused on: the Faculty of Electrical Engineering, the Faculty of Information Technology, the Czech Institute of Informatics, Robotics and Cybernetics and the new Research Centre for Informatics, which recently required its own supercomputer. Is artificial intelligence one of the prominent fields?

Yes. As I said, artificial intelligence is the subject that will likely most influence our lives – either directly or via the development of advanced production technologies or in the fields of security or defence. We have to contribute to the development of AI, both on the theoretical level and in applications, and also of course in the area of training and cooperation with industry and other research bodies. At CTU we are extraordinarily strong in all these respects and complement one another. That is, we can complement one another virtually perfectly, if we manage to be coordinated. For me this is now a key task: to ensure the mutual development of all sides so they complement one another and coexist constructively. It is important to create a coherent whole, not just from the internal perspective but from the perspective of establishing coherent cooperation within the framework of the Czech Republic as a whole. That is utterly essential if we are to successfully achieve a significant position in the branch within the European Union. I took the setting of strategy in this regard under my own wing, along with other rectors from concerned universities. CTU focuses a major part of its research and educational activities on the area of artificial intelligence and is a key part of the prg.ai cluster, while the initiative AI-CZECHIA has also been created. So for CTU, AI is a very important subject. However, it should be pointed out that the CTU's aims in top class research and education are far broader, and that's something we should constantly emphasise. We have a range of great research pillars and AI is only one of them.

CTU is already the recipient of a number of multi-million-crown projects, we could even say billion-crown projects, such as cooperation with GE Aviation, which chiefly concerns the Faculty of Mechanical Engineering, and the European project RICAIP, which is being carried out by CIIRC and the Centre of Advanced Applied Sciences, where the guarantor is the Faculty of Nuclear Sciences and Physical Engineering. Do the strategic visions outlined anticipate synergy with these up and running projects?

As regards the above mentioned aviation and space industry projects and the Centre of Advanced Applied Sciences, they are built into the strategic project visions that we've prepared. I am now working on all our capacities being employed within the strategic screening. We've already prepared a programme of integration of joint capacities, which we are going to implement with the rectors of other universities. This programme has already obtained support at ministries and the board of the government Council for Research, Development and Innovation, so I'm convinced it'll be successful.

In your view, which fields are the "powerhouse" of the university and which, by contrast, need a greater push to ensure CTU is more visible there too?
I think CTU is developing relatively uniformly. You couldn't say that one is a powerhouse and another has fallen behind. The important thing is we have in the Rector's Collegium a framework that functions well and where we can solve problems and find solutions; if something isn't going well somewhere, we're able to provide feedback. From the research perspective, there are naturally some sections with greater performance and output. But those that are younger, therefore in a start-up phase of research, or those that historically have not had such research results, are also trying their best to improve their quality. This is aided by the university's engagement in the projects and work of our quality watchdog, the Internal Evaluation Board. It is without question important to speak about all the areas where research and top-rate training are thriving.

How does the cooperation between our scientists and top European universities actually look? Which currently underway projects would you like to highlight? And which of those under consideration do you believe have the greatest potential for successful scientific results and for improving the preparedness of students as future specialists in technical fields?
Our cooperation within the framework of Europe and the world is very broad – not only with universities, but also with research organisations and centres. In view of that range, it is hard to highlight something as an example. All faculties and institutes strive to establish the highest quality cooperation, and I think they're succeeding. If I should offer an example, I'll stay in a field I understand. I'm happy that we have been able to continually develop cooperation with a whole network of world research facilities focused on particle physics and actually with all the universities involved in the conducting of experiments. In specific terms, in recent months an act of association of the Czech Republic to the future project FAIR at the GSI in Darmstadt took place. This was the culmination of our long-term cooperation within the CBM and HADES projects that run there. As regards improving the preparedness of our graduates, we have high hopes for the European University project that we have become involved in with the EUROTECH consortium and which we now expect will receive European Commission support. If it comes about, it will be an important step to connecting technical education with leading European technical universities and Technion in Haifa.

View
of the Dejvice
Campus

Main Part of the Annual Report of CTU in Prague

The Czech Technical University in Prague is one of the pillars supporting the achievements of industry and science in the Czech lands. The institution that led to the foundation of our university has existed for over three hundred years. In 1705, Christian Josef Willenberg, a fortification engineer, asked Emperor Leopold for permission to "educate six noblemen, four knights and two members of the bourgeoisie in the engineering arts". It was finally Leopold's son, Joseph I, who ordered, in an edict published in 1707, the Bohemian estates to ensure education of engineers in Prague. Thus, the year 1707 is considered the foundation date of our university.

In 1717, after ten years of delays, an engineering professorship was established by a Decree of Bohemian Estates of 9 November, and Willenberg was appointed its head; classes started on 7 January 1718.

In its more than 310 years of existence, the university has undergone many changes, expansions, suspension of operation during the tragic period of World War II, restructuring and repeated growth. In 1952, several faculties were carved out of CTU and transformed into what is today the University of Economics, the University of Chemistry and Technology, and the Czech University of Life Sciences. In 1959, the Faculty of Nuclear and Physical Engineering at Charles University was transferred to CTU and, in 1976, the Faculty of Architecture was established. Gradually, three other faculties were set up in compliance with the needs of the society and interests of students – namely, the Faculty of Transportation Sciences, the Faculty of Biomedical Engineering, and the Faculty of Information Technology.

Currently, CTU consists of:

8 faculties:

- Faculty of Civil Engineering (FCE)
- Faculty of Mechanical Engineering (FME)
- Faculty of Electrical Engineering (FEE)
- Faculty of Nuclear Sciences and Physical Engineering (FNSPE)
- Faculty of Architecture (FA)
- Faculty of Transportation Sciences (FTS)
- Faculty of Biomedical Engineering (FBME)
- Faculty of Information Technology (FIT)

6 university institutes:

- Klokner Institute (KI)
- Masaryk Institute of Advanced Studies (MIAS)
- Institute of Physical Education and Sport (ÚTVS)
- University Centre for Energy Efficient Buildings (UCEEB)
- Czech Institute of Informatics, Robotics and Cybernetics (CIIRC)
- Institute of Experimental and Applied Physics (IEAP)

Other constituent parts of CTU:

- Computing and Information Centre (CIC)
- Central Library at CTU (ÚK)

Service facilities:

- CTU Rector's Office (Rectorate)
- Service Facilities Administration (SÚZ)
- CTU Publishing House (ČTN)

Most faculties and constituent parts operate in Prague, with the exception of the Faculty of Biomedical Engineering, which is based in Kladno, the University Centre for Energy Efficient Buildings (UCEEB)in Buštěhrad, and detached departments of the Faculty of Transportation Sciences and the Faculty of Nuclear Sciences and Physical Engineering in Děčín and the Faculty of Mechanical Engineering – the Centre of Vehicles for Sustainable Mobility in Roztoky near Prague.

The university's main centre is the Dejvice campus in Prague 6, where the CTU Rector's Office, the Faculty of Mechanical Engineering, the Faculty of Electrical Engineering, the Faculty of Architecture, and the Faculty of Information technology are located, as well as the Klokner Institute, the Czech Institute for Informatics, Robotics and Cybernetics, the Computing and Information Centre, and the Central Library at CTU. The Faculty of Transportation Sciences is based on Konviktská Street and has other premises on Horská Street and Na Florenci Street. The Faculty of Nuclear Sciences and Physical Engineering is located on Břehová Street, Old Town, and has other premises on Trojanova Street and in a building owned by the Faculty of Mathematics and Physics, Charles University, in Trója. The Institute of Experimental and Applied Physics is located in Betlémský Palace on Husova Street, in the oldest building owned by CTU, to which part of the CTU Rector's Office is to be relocated.

Another CTU campus is located on Karlovo Square, where the Faculty of Mechanical Engineering and the Faculty of Electrical Engineering have some of their premises.

Aside from these locations, CTU also has other workplaces in different parts of Prague and the whole of the Czech Republic.

All faculties and constituent parts are located on premises owned by CTU, with the exception of the Central Library, the CTU Archive, the Klokner Institute and parts of the Institute of Experimental and Applied Physics.

Regarding student accommodation, CTU has more than eight thousand beds, most of which are situated in dormitories in Strahov, Podolí and Dejvice.

The Central Library at CTU is located at the National Library of Technology (NLT) in Dejvice, local libraries are located in premises of faculties based outside Dejvice (the Faculty of Biomedical Engineering, the Faculty of Transportation Sciences, the Faculty of Nuclear Sciences and Physical Engineering).

The university is headed by the rector and is administered by self-governing bodies. The CTU Academic Senate is a body of 45 representatives elected by individual faculties (8 x 5 representatives) and university institutes (5 representatives). Other self-governing bodies include the CTU Scientific Council, the Disciplinary Commission and the rector. Faculties are headed by deans elected by Academic Senates at individual faculties;

university institutes and other constituent parts are headed by directors appointed by the rector.

At the moment, 17,610 students study at the university in three types of study (bachelor, follow-up master and doctoral), of which 5,482 (31%) are female students. The trend is slightly decreasing and currently is slower than the declining demographic trend.

As usual, the Faculty of Civil Engineering (3,547), the Faculty of Mechanical Engineering (2,710), the Faculty of Electrical Engineering (2,045), and the Faculty of Information Technology (2,157) had the highest numbers of students. 4,640 people attended a total of 748 lifelong learning courses.

Apart from basic tuition in the Czech language, most fields of study (63) are also taught in English and one field of study in Russian and one in German. In 2018, foreign students accounted for 17% (3,050) of the total number of students. 3.25% of students paid for their tuition.

Through mobility programmes, CTU received a total of 8,881 students from abroad and sent 821 students abroad in 2018. The university had a total of 3,962 employees, including 1,564 academic workers, of whom 20% were women. 4,458 students completed their studies, of which 33.5% were women and 12.4% were foreign students. This represents ca 6.4% of all university graduates in the given year.

Mission of CTU

"In the future we want to remain a research university that will educate further generations of graduates and scientists with technical and general skills to satisfy the fast-changing requirements and needs of the decades to come."

Vision of CTU

"The Czech Technical University in Prague will strengthen its position as a leading technical university in the Czech Republic, and its position as a globally recognized research university that develops the talent and competences of its students, academic and other workers. It will strive to fulfil its function as a respected authority in education, scientific, research, artistic and engineering creative activities, for which it will use the experience of the previous generations of engineers and architects and the skills of the current and future academic workers and students."

The activity of CTU in all fields was drawn primarily from the CTU Long-Term Plan for the years 2016–2020 (Plan of Strategic Development of CTU 2016–2020), its annual updates (Plans for Implementation of the Strategic Goal) and the CTU Strategy. The aim of all academic and other staff is to contribute to CTU becoming a technical university that is recognized on national and international levels. Being the oldest one, CTU historically holds an extraordinary place among Czech technical universities. At present, CTU – as a research university – is the second most active entity active in research among Czech universities. In terms of employability of graduates and the scope of scientific, research, development, innovative and other creative activities, CTU achieves high quality results.

CTU's mission is to provide students with a quality education in accordance with the specialization of individual faculties and relying on high quality research in order for them to succeed in their respective fields both nationally and internationally. In line with its mission, CTU defines itself as a research university and strives to act as a flagship of innovation in cooperation with industry. This shapes the ensuing short-term and long-term goals defined in the CTU Strategy. This includes primarily the following goals in key areas:

Education

In accordance with the Long-Term Plan, CTU created conditions for providing quality education through clearly defined and generally observed rules. This primarily concerns:

- The ability to establish interdisciplinary and multidisciplinary study programmes in connection with scientific, research, innovative, artistic and engineering creative cooperation within and without CTU,
- High quality standards of all activities, including demands on quality of creative outcomes, knowledge, skills, competencies and character traits of students and graduates,
- Career development of academic and non-academic staff that will lead to better quality pedagogical and research capacities of CTU.

The university's position in the field of education is documented also by constant interest of study applicants. Even with the current decline of the population curve in the category of young people applying for university, CTU is able to fulfil internally planned number of accepted applicants.

The 15,262 applications for study submitted last year are a proof of the long term interest to study at CTU. As a result, 7,680 students enrolled in CTU.

A total of 4,764 students graduated from all types of studies at CTU.

About 5.8% of all university students in the Czech Republic study at CTU. Compared to 2017, the number has grown by 0.3 percentage points. (Source – Czech Statistical Office (CSO): Schools and School facilities).

The level of educational activity will be enhanced in following years by projects the university applied for in the framework of the OP VVV calls 15 to 18 and that are focused on innovation of accredited study programmes and primarily on improving material and technical conditions of bachelor, master and doctoral study programmes.

The offered programmes and fields of study reflected the applicants' preferences; new programmes are gradually accredited and replace the existing ones.

Science, research, innovations, artistic and other creative activities

Results achieved in this area were transferred into education, research (basic, applied, collaborative and contractual research) and the life of the university in order to build teams and interdisciplinary fields of study.

CTU's main strategic goals included:

- The strategic development of CTU oriented to both the quality of results of scientific, research, innovation, artistic and engineering creative activities and the level of internationalization oriented to cooperation with leading partners in the EU and North America, in particular,
- Technical and economic sustainability and efficiency of used research capacities developing interdisciplinary communication and cooperation between faculties and constituent parts,
- Involvement of excellent workplaces in macro-regional, pan-European and global projects responding to latest findings and aim to win more prestigious international grants, including the ERC grants,
- Connection and cooperation with industry leading to engineering creative approach to solution of practical tasks and creation of innovations,
- A transparent system of rules for transfer of technologies, commercial use of results, protection of intellectual property and copyright laws and for creation of start-ups and spin-offs protecting intellectual property created at CTU and maximally benefiting CTU.

The results of scientific and research activities are best documented by the 2011-2018 assessment results which reflect the growing trend and which provide promising expectations for the years to come. CTU was also successful in receiving OP VVV projects, primarily in the field of excellent teams and excellent research.

Students widely participated in research activities as part of various projects of external providers as well as within specific research financed from the internal student grant competition.

Doctoral students are an important part of research teams. Last year, there were a total of 1,735 doctoral students – i.e. about 10% of the total number of students at CTU.

In the last years we succeeded in improving the quality of doctoral study programmes. The involvement of students in research projects with a possibility of better financial reimbursement increased, including an increase in scholarships paid to students in doctoral study programmes. About 13.8% of doctoral students were international students, which is a positive trend.

Internationalization

Educational, scientific, research, innovation, artistic and other creative activities at CTU have been of a prominently international nature focusing on:

- Support of intense international contacts and acknowledgement of the international context and international experience in all university activities,
- Building an environment which relies on the full integration of international students, permanent foreign employees, visiting professors and researchers in the life of the academic community,

- Involvement of students, academic and non-academic staff in mobility programmes, under which some faculties support financially demanding studies of students at universities abroad.

In recent years, the university has been putting a lot of emphasis on the support of international relations. Over one hundred agreements on mutual cooperation between CTU and international partners have been concluded, in the framework of which short-term and long-term outgoing study trips and reception of students and staff are carried out.

When concluding agreements, CTU prefers institutions ranking in the first half of international ranking charts. Support provided to students and staff is reflected in continuous financial support totalling around CZK 40 million from various sources. In 2018, foreign students accounted for 17% of the total number of students. A joint project of Prague-based universities financed in the framework of the Centralized Development Programmes, the Study in Prague consortium, which aims to promote Prague and studying at universities in Prague belongs among major events supporting development in this field. In both short and long-term perspective, the project is aimed to support an increase in the number of students and academic workers from the countries of the EU and North America.We joined the prestigious EuroTech alliance and we started together preparation the European Universities project.

CTU has been involved in a number of international programmes. The school participates in a total of 17 joint/double degree programs with foreign universities.

Relevance

In its activities, CTU aims to have impact on current social development and achieve results in latest scientific, research, innovation, artistic and other creative activities focusing on:

- Attaining and maintaining a leading position among technical universities in scientific, research, innovation, artistic and engineering creative activities,
- Close and mutually beneficial contacts with partners on local, national and international level, with graduates, employers, scientific and academic institutions, as well as with the non-profit sector and public and state administration,
- Strengthening of the position of a respected and respectable partner,
- Maintaining the sum of civilization technical knowledge and development of ethical, moral and human values necessary for the operation of modern society.

CTU continually works with other public universities in the Czech Republic. Its employees are members of scientific boards at universities and faculties across the Czech Republic, academicians actively participate in activities of other bodies representing tertiary education.

The university paid a lot of attention to promotion of technical education, regularly participated in promotional events across the Czech Republic. During the year 2018, CTU organized a number of events aimed at primary and high schools. To name just a few,

let's mention the Kids' University for children at primary schools and various summer schools for high school students. CTU created a model of a "CTU Partner School" and established the first model relationship with a basic school in Prague – Čakovice. Cooperation between basic and high schools promoting technical education was carried out on the level of faculties and university institutes too.

Promotional activities and competitions are organized throughout the academic year both with students attending the events in person or participating via mail. High school students can participate in a competition that supports high-school creative activities and that is organized jointly by the Faculty of Civil Engineering, the Faculty of Mechanical Engineering, and the Faculty of Electrical Engineering. Other faculties do not remain behind. The Career Centre at CTU offers support to students; the university also intensively cooperates with the CTU Student Union, which develops leisure and artistic activities of students, promoting the university and supporting students in different areas of life.

Graduates can become members of the Association of Graduates and Friends of CTU.

As one of the biggest employers in Prague 6, CTU cooperates with the Prague 6 municipality, primarily in areas related to the university activities and the life of its students and employees. In the future, CTU will aim to create even closer synergy with the Prague 6 municipality, primarily with regards to the development of the university campus and its immediate vicinity under the Dejvice Campus project.

Efficient management and financing

The management and decision-making processes at CTU were conceptual, efficient, transparent, based on principals of academic self-governance and aiming to:

- Manage the university in a democratic and, if possible, consensual manner,
- Take decisions based on relevant data,
- Control activities of the university using an internal system of quality control,
- Communicate fundamental decisions to all partners within and without the university.

As part of our investment activity, new spaces were completed at individual constituent parts, such as new classrooms. Student dormitories were also renovated.

In 2018, as part of a priority goal of efficient financing in the field of investment, we primarily focused on the implementation of approved projects within the Research, Development and Education Operational Programme (OP VVV). They included primarily projects in the ESF and ERDF calls for universities. Other sources of financing of investment activities included programmes of the Ministry of Education, Youth and Sports and our own sources. In 2018, we made full use of the university's own fund for the development of investment property for small investment activities. Last but not least, the IRP financial allocation for 2016-2018 was used as a source of financing.

In 2018, the following goals were fulfilled:

Renovation of the roof of the Betlémská Chapel, conversion of the attic in the building on Trojanova Street, renovation of KOKOS Kladno, improvements to the interior of building A – a new ventilation system and renovation of bathrooms, renovation of the gas boiler room in the building on Karlovo Square and renovation of the building of the Faculty of Transportation Sciences on Horská Street, worth a total of CZK 210m.

The major goals of efficient management included the implementation of the BIM methodology in the university environment, and implementation of pilot projects including digitalization of buildings in connection with the Concept for the Implementation of the BIM Methodology in the Czech Republic, approved by the government.

The information system is an important part of the university management. A lot of attention was given to this area as can be seen from the amount of financial resources invested in the development of information systems providing data for efficient management. Following the amendment of the Act on Higher Education Institutions and pursuant to other acts, the university invests over CZK 30 million in the development of information systems annually from its own resources as well as the resources provided by the Institutional Plan (IP) and the Centralized Development Programmes (CRP). This whole field enjoys a continual attention of the CTU Academic Senate and other bodies at CTU, which regularly controlled fulfilment of individual indices and resolutions.

Conclusion

Due attention has been paid to individual strategic areas of university activities, both on the level of the university leadership and the leadership of faculties, university institutes, other constituent parts and service facilities. Concrete achieved results are presented and commented on in the text and chart annexes of this Annual Report on Activities pursuant to the MŠMT outline.

The Annual Report forms the information basis for further development of the university in 2018, provides relevant information to tackle challenges the university will face in connection with ongoing processes and the development in society on national and global levels and the upcoming changes in the financing and management of sustainability of universities within the framework of the Methodology of Evaluation of Research Organizations 17+ and related models of financing of universities.

B

Annexes to the Annual Report of CTU in Prague

1. Basic facts about CTU

1.1. Full name of university, commonly used acronym, registered address of university and of all its constituent parts (faculties, institutes, departments and branches)

The Czech Technical University in Prague (hereinafter referred to as CTU) is a public university.

Abbreviated name: CTU in Prague. Acronym: CTU

CTU's **registered address** is Prague.

Address:

Czech Technical University in Prague
Jugoslávských partyzánů 1580/3, 160 00 Prague 6
http://www.cvut.cz

Faculties:

- Faculty of Civil Engineering (FCE), Thákurova 7, 166 29 Prague 6
- Faculty of Mechanical Engineering (FME), Technická 4, 166 07 Prague 6 (detached Centre of Vehicles for Sustainable Mobility, Přílepská 1920, 252 63 Roztoky)

- Faculty of Electrical Engineering (FEE), Technická 2, 166 27 Prague 6
  Faculty of Nuclear Sciences and Physical Engineering (FNSPE), Břehová 7, 115 19 Prague 1(detached department in Děčín, Pohraniční 1, 405 01 Děčín 1)
- Faculty of Architecture (FA), Thákurova 9, 166 34 Prague 6
- Faculty of Transportation Sciences (FTS), Konviktská 20, 110 00 Prague 1 (detached Institute for Bachelor Studies in Děčín, Pohraniční 1, 405 01 Děčín 1)
- Faculty of Biomedical Engineering (FBME), nám. Sítná 3105, 272 01 Kladno
- Faculty of Information Technology (FIT), Thákurova 9, 160 00 Prague 6

University institutes:

- Klokner Institute (KI), Šolínova 7, 166 08 Prague 6
- Masaryk Institute of Advanced Studies (MIAS), Kolejní 2637/2a, 160 00 Prague 6
- Institute of Physical Education and Sport (ÚTVS), Pod Juliskou 4, 160 00 Prague 6
- University Centre for Energy Efficient Buildings (UCEEB), Třinecká 1024, 273 43 Buštěhrad
- Czech Institute for Informatics, Robotics and Cybernetics (CIIRC), Jugoslávských partyzánů 1580/3, 160 00 Prague 6
- Institute of Experimental and Applied Physics CTU (IEAP), Husova 240/5, 110 00 Staré Město

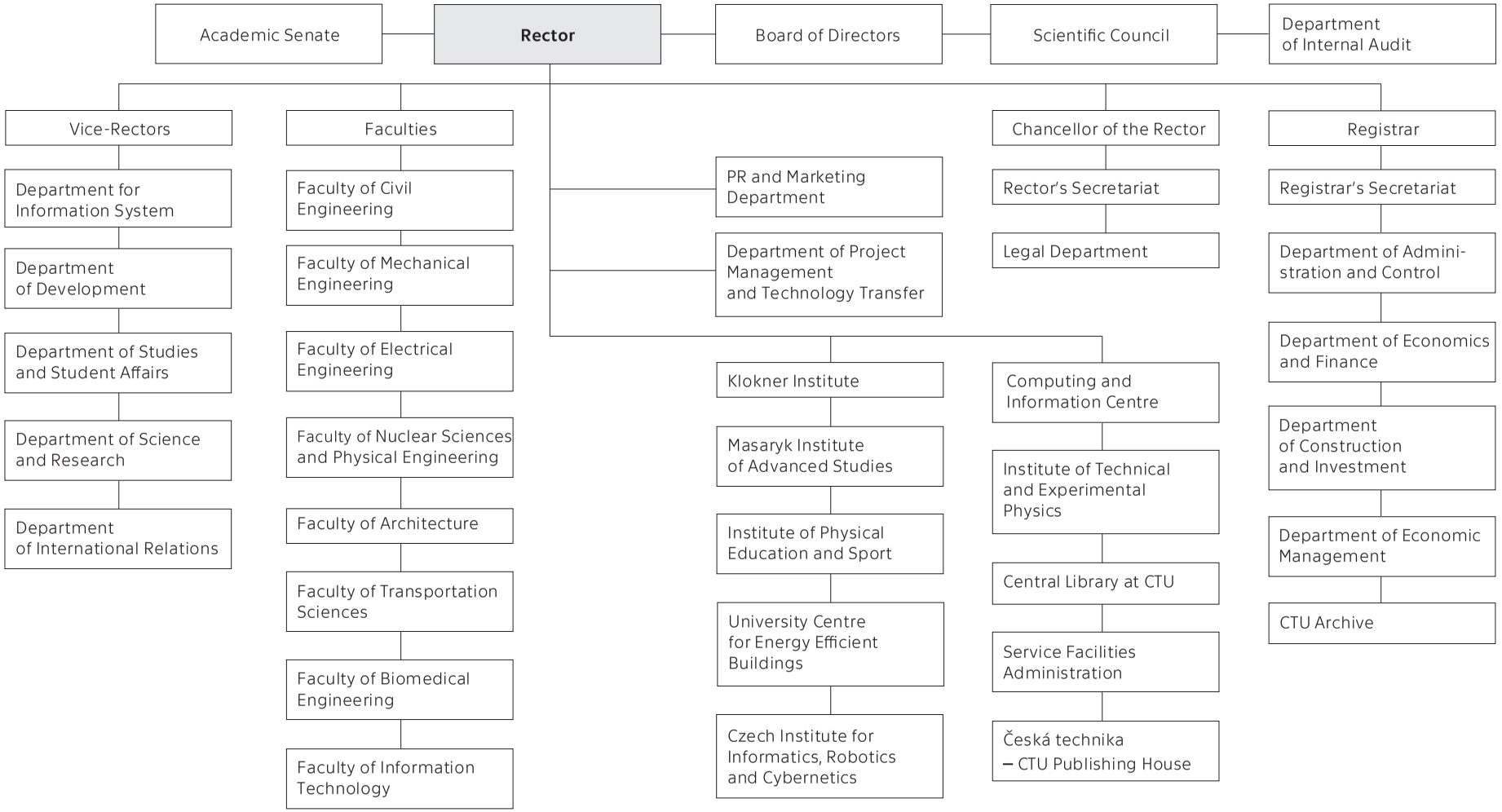
Other constituent parts of CTU

- Computing and Information Centre (CIC), Jugoslávských partyzánů 1850/3, 160 00 Prague 6
- Central Library at CTU (ÚK), Jugoslávských partyzánů 1850/3, 160 00 Prague 6

Service facilities:

- Rector's Office (Rectorate), Jugoslávských partyzánů 1580/3, 160 00 Prague 6
- Service Facilities Administration (SÚZ),Vaníčkova 7, 160 17 Praha 6
- CTU Publishing House, Thákurova 1, 160 41 Praha 6

1.2. CTU organizational chart



1.3. Academic bodies at CTU

1.3.1. CTU management

Rector	doc. RNDr. Vojtěch PETRÁČEK, CSc. (since 1 February 2018) prof. Ing. Petr KONVALINKA, CSc., FEng. (till 31 January 2018)
Vice-Rectors	
For Bachelor and Master Studies	doc. Dr. Ing. Gabriela ACHTENOVÁ (since 1 March 2018) doc. Ing. Josef JETTMAR, CSc. (till 19 February 2018)
For Informatics	Ing. Radek HOLÝ, Ph.D. (since 1 June 2018) RNDr. Igor ČERMÁK, CSc. (till 26 February 2018)
For Development and Strategy	doc. Ing. arch. Petr KORDOVSKÝ (since 1 February 2018) doc. Ing. Jan CHYSKÝ, CSc. (till 26 February 2018)
For Science, Creative Activities and PhD Studies	prof. Ing. Zbyněk ŠKVOR, CSc.
For Construction	prof. Ing. Alena KOHOUTKOVÁ, CSc. (since 1 February 2018)
For International Relations	prof. Ing. Zbyněk ŠKVOR, CSc. (acting in interim capacity since 26 February 2018) prof. RNDr. Miroslav VLČEK, DrSc. (till 26 February 2018)
Registrar	Ing. Jiří BOHÁČEK (since 1 June 2018) Mgr. Jan GAZDA, Ph.D. (till 31 May 2018)
Chair of the CTU Academic Senate	doc. Ing. Jan JANOUŠEK, Ph.D.
Chancellor	Ing. Lucie ORGONÍKOVÁ (since 1 April 2018) Ing. Josef SVOBODA, Ph.D. (till 31 March 2018)

1.3.2. Board of Directors

Chair	Ing. arch. Jan FIBIGER, CSc.	Chair of Supervisory Board, Foundation for the Development of Architecture and Civil Engineering (ABF Foundation)
Deputy chairs	Ing. Jaroslav MÍL, MBA	Managing Director, Augustin IDC, s.r.o.
	Ing. Eduard PALÍŠEK, Ph.D., MBA	CEO, Siemens, s. r. o.
Members	Ing. Vladimír DLOUHÝ, CSc.	President, Chamber of Commerce of the Czech Republic
	Ing. Jaroslav DOLEŽAL, CSc.	Consultant, emeritus representative, Honeywell, Czech Republic
	Ing. Dana DRÁBOVÁ, Ph.D., dr. h. c.	President, State Office for Nuclear Safety
	Ing. Petr DVOŘÁK, MBA	General Director, Czech Television
	Ing. Dan JIRÁNEK	Executive director, Union of Towns and Municipalities of the Czech Republic, Member of the European Committee of the Regions
	Ing. arch. Jan KASL	Director, Best Development Prague architecture studio
	Ing. Vlastimil PICEK	Mayor, Brandýs nad Labem-Stará Boleslav
	Ing. Jiří RUSNOK	Governor, Czech National Bank

	RNDr. Jiří SLOVÁK	Managing Director, Czech Radioactive Waste Repository Authority
	Ing. Michaela ŠOJDROVÁ	MEP, European Parliament
	prof. Ing. Ivan WILHELM, CSc.	Plenipotentiary of the Czech Government for European Research Programmes, Emeritus Rector, Charles University
Secretary	Ing. Lucie ORGONÍKOVÁ (since 1 April 2018) Ing. Josef SVOBODA, Ph.D. (till 31 March 2018)	Chancellor, CTU in Prague

1.3.3. CTU Scientific Council

Chair	doc. RNDr. Vojtěch Petráček, CSc.	FNSPE, CTU Rector
Internal members	prof. Ing. Petr Hájek, CSc.	FCE
	prof. Ing. Jiří Máca, CSc.	FCE, Dean
	prof. Ing. František Wald, CSc.	FCE
	prof. Ing. Tomáš Jirout, Ph.D.	FME
	prof. Ing. Jan Macek, DrSc.	FME
	prof. Ing. Michael Valášek, DrSc.	FME, Dean
	prof. Ing. Jiří Matas, Ph.D.	FEE
	prof. Ing. Pavel Ripka, CSc.	FEE, Dean
	prof. Ing. Zbyněk Škvor, CSc.	FEE, Vice-Rector for Science, Creative Activities and PhD Studies
	prof. Ing. Hana Jelínková, DrSc.	FNSPE
	prof. Ing. Igor Jex, DrSc.	FNSPE, Dean
	prof. Dr. ir. Henri Hubertus Achten	FA
	prof. Ing. arch. Ladislav Lábus, Hon. FAIA	FA, Dean
	prof. Ing. arch. Zdeněk Zavřel, dr. h. c.	FA
	doc. Ing. Pavel Hrubeš, Ph.D.	FTS, Dean
	prof. Ing. Ondřej Jiroušek, Ph.D.	FTS
	doc. Ing. Jaroslav Machan, CSc.	FTS
	prof. MUDr. Ivan Dylevský, DrSc.	FBME, Dean
	prof. MUDr. Leoš Navrátil, CSc., MBA	FBME
	doc. RNDr. Ing. Marcel Jiřina, Ph.D.	FIT, Dean
	doc. Ing. Hana Kubátová, CSc.	FIT
	prof. Ing. Pavel Tvrdík, CSc.	FIT
External members	prof. RNDr. Miroslav Doupovec, CSc., dr. h. c.,	Brno University of Technology
	Ing. Dana Drábová, Ph.D., dr. h. c.	President, State Office for Nuclear Safety
	prof. Ing. Rostislav Drochytka, CSc., MBA	Brno University of Technology
	prof. Ing. Jiří Homola, CSc., DrSc.	Institute of Photonics and Electronics, CAS
	prof. RNDr. Jan Kratochvíl, DrSc.	Faculty of Mathematics and Physics, Charles University in Prague, Dean
	Dr. František KRAUS, DrSc., Wiss Adjunkt	ETH Zürich
	prof. Ing. Alois Materna, CSc., MBA	VŠB – TU Ostrava
	prof. Ing. Petr Noskievič, CSc.	VŠB – TU Ostrava

	prof. Ing. Ivo Provazník, Ph.D.	Brno University of Technology
	prof. Ing. arch. Jaroslav Šafer	Czech Chamber of Architects
	doc. Ing. Libor Švadlenka, Ph.D.	Faculty of Transport Engineering, University of Pardubice, Dean
	prof. Dr. Ing. Pavel Zemčík	Brno University of Technology
Extraordinary members	prof. Ing. Zdeněk Bittnar, DrSc.	FCE
	prof. Dr. Ing. Vladimír Blažek	RWTH Aachen
	doc. PaedDr. Jiří Drnek, CSc.	ÚTVS, Director
	doc. Ing. Lukáš Ferkl, Ph.D.	UCEEB, Director
	prof. Ing. František Hrdlička, CSc.	FME
	prof. Ing. Stanislava Hronová, CSc.	University of Economics, Prague
	doc. Ing. Jiří Kolísko, Ph.D.	KI, Director
	prof. RNDr. Bohumil Kratochvíl, DrSc.	University of Chemistry and Technology in Prague
	prof. Ing. Karel Melzoch, CSc.	University of Chemistry and Technology in Prague
	RNDr. Michael Prouza, Ph.D.	Institute of Physics, CAS
	prof. RNDr. Karel Šafařík, CSc.	FNSPE
	doc. Ing. Ivan Štekl, CSc.	IEAP, Director
	doc. Ing. Lenka Švecová, Ph.D.	MIAS, Director
	prof. Ing. Petr Konvalinka, CSc., FEng.	FCE, Emeritus Rector
	prof. Ing. Václav Havlíček, CSc.	FEE, Emeritus Rector
	prof. Ing. Jiří Witzany, DrSc.	FCE, Emeritus Rector
	prof. Ing. Petr Zuna, CSc., DEng. h. c., FEng.	FME, Emeritus Rector

1.3.4. Academic Senate

Chairman	doc. Ing. Jan JANOUŠEK, Ph.D.	FIT
Vice-Chairman (staff)	Ing. arch. Dana MATĚJOVSKÁ, Ph.D.	FA
Vice-Chairman (student)	Ing. Stanislav JEŘÁBEK	FIT
Chairman of Legislative Committee	RNDr. Petr OLŠÁK	FEE
Head Chairman of Economic Committee	prof. Ing. František HRDLIČKA, CSc.	FME
Chairman of Committee for Development and Quality	prof. Ing. Václav HLAVÁČ, CSc. prof. Ing. Jiří NOŽIČKA, CSc.	CIIRC (since 30 May 2018) FME
Chairman of Education Committee	RNDr. Jiří ŠRUBAŘ, Ph.D. prof. Ing. Karel KABELE, CSc.	FA (since 28 March 2018) FCE
Chairman of SF Committee	Ing. Tomáš DRÁBEK Bc. Pavel BAKOVSKÝ Marie DVOŘÁKOVÁ	FEE (since 3 October 2018) FEE (28 March till 19 June 2018) FTS (till 28 February 2018)
Chairman of Students' Committee	Bc. Michal FARNÍK Bc. Pavel BAKOVSKÝ	FNSPE (since 28 March 2018) FEE (till 27 March 2018)
Chairman of Committee for IT Strategy	prof. Dr. Ing. Jan KYBIC	FEE

Chairman of Committee for Science, Creative Activities and Doctoral Study	doc. Dr. Ing. Ivan RICHTER doc. RNDr. Vojtěch PETRÁČEK, CSc.	FNSPE (since 28 March 2018) FNSPE (till 31 January 2018)
Members of Academic Senate	prof. Ing. Zdeněk BITTNAR, DrSc.	FCE
	Ing. arch. Robert BOUŠKA	FCE
	doc. Ing. Jiří CAJTHAML, Ph.D.	FCE
	prof. Ing. Karel KABELE, CSc.	FCE
	Ing. Michal MÁRA	FCE
	prof. Ing. Jan TYWONIAK, CSc.	FCE
	doc. Ing. Václav BAUMA, CSc.	FME
	prof. Ing. František HRDLIČKA, CSc.	FME, Chairman of Economic Committee, AS CTU
	prof. Ing. Jiří NOŽIČKA, CSc.	FME
	Ing. Kryštof ŠULC	FME
	Ing. Jiří VOLECH	FME
	Bc. Pavel BAKOVSKÝ	FEE
	Bc. Jakub BEGERA	FEE
	RNDr. Ilona Ali BLÁHOVÁ, Ph.D.	FEE
	Ing. Tomáš DRÁBEK	FEE, Chairman of SFA Committee, AS CTU
	prof. Dr. Ing. Jan KYBIC	FEE, Chairman of Committee for IT Strategy, AS CTU
	RNDr. Petr OLŠÁK	FEE, Chairman of Legislative Committee, AS CTU
	Bc. Michal FARNÍK	FNSPE, Chairman of Students' Committee, AS CTU
	prof. Ing. Goce CHADZITASKOS, CSc.	FNSPE
	Ing. Kateřina CHYTRÁ	FNSPE
	doc. Ing. Jiří MIKYŠKA, Ph.D.	FNSPE
	doc. RNDr. Vojtěch PETRÁČEK, CSc.	FNSPE (till 31 January 2018)
	Ing. Petr PRŮŠA, Ph.D.	FNSPE (since 4 September 2018)
	doc. Dr. Ing. Ivan RICHTER	FNSPE, Chairman of Committee for Science, Creative Activities and Doctoral Study, AS CTU
	Bc. Lukáš HODEK	FA
	Bc. Josef HOLEČEK	FA
	Ing. arch. Dalibor HLAVÁČEK, Ph.D.	FA
	Ing. arch. Dana MATĚJOVSKÁ, Ph.D.	FA, Vice-Chairwoman, AS CTU
	RNDr. Jiří ŠRUBAŘ, Ph.D.	FA, Chairman of Education Committee, AS CTU
	Marek WAGNER	FA
	Ing. Bc. Vladimír FALTUS, Ph.D.	FTS
	Ing. Mgr. Jan FEIT	FTS
	Ing. Tomáš DOKTOR	FTS
	Marie DVOŘÁKOVÁ	FTS
	Ing. Šárka HULÍNSKÁ	FTS
	Bc. Filip KONEČNÝ	FTS
	Michal ŠUPEJ	FTS

	Mgr. Pavel BÖHM	FBME
	Ing. Yulia EFREMOVÁ, Ph.D.	FBME
	Ing. Jan KAŠPAR	FBME
	Bc. Tomáš POKORNÝ	FBME
	Mgr. Veronika VYMĚTALOVÁ, Ph.D.	FBME
	Ing. Magda FRIEDJUNGOVÁ	FIT
	doc. Ing. Jan JANOUŠEK, Ph.D.	FIT, Chairman, AS CTU
	Bc. Stanislav JEŘÁBEK	FIT, Vice-Chairman, AS CTU
	Ing. Zdeněk MUZIKÁŘ, CSc.	FIT
	Ing. Radomír POLÁCH	FIT
	Norbert ČERVENÝ	MIAS
	prof. Ing. Václav HLAVÁČ, CSc.	CIIRC, Chairman of Committee for Development and Quality, AS CTU
	Ing. David ČÍTEK	KI
	Ing. Bc. Pavel ANDRES, Ph.D., ING.PAED.IGIP	MIAS
	PhDr. Jaroslav SCHMID, CSc.	ÚTVS
	Bc. Jozef ŠEBÁK	MIAS

1.3.5. CTU Disciplinary Commission

Chair	Ing. Petr TEJ, Ph.D. (KI)
Members of the Commission	
Academic workers	doc. Ing. Petr BOUŠKA, CSc. (KI) doc. Ing. Vít POŠTA, Ph.D. (MIAS) doc. Ing. Martin ZRALÝ, CSc. (MIAS)
Students	Ing. Martin KRYŠTOV (KI) Anna POŽÁROVÁ (MIAS) Jakub ŠTOREK (MIAS)
Substitute Members	
Academic workers	Ing. Dagmar ČÁMSKÁ, Ph.D. (MIAS) Ing. Petr TEJ, Ph.D. (KI)
Students	Ing. Lucie VOŠAHLÍKOVÁ (KI) Bc. Veronika KOUTNÍKOVÁ (MIAS)

1.3.6. Ethical Commission

Chair	prof. Ing. Jan UHLÍŘ, CSc. (FEE)
Members of the Commission	prof. Ing. Miloslav HAVLÍČEK, DrSc. (FNSPE)
	prof. Ing. Jan HOLUB, Ph.D. (FIT)
	doc. Ing. Jitka VAŠKOVÁ, CSc. (FCE)
	prof. Ing. Pavel ZÍTEK, DrSc. (FME)

1.4. CTU presence in the representation of Czech Universities

Czech Rectors' Conference
CTU Rector, doc. RNDr. Vojtěch Petráček, CSc.

CTU delegates at the Council of Universities
Presidium of the Council of Universities
RNDr. Petr Olšák, CTU

Members of the Assembly of the Council of Universities	**Delegated by**
RNDr. Petr Olšák	CTU
doc. Ing. Jiří Cajthaml, Ph.D.	CTU
Bc. Michal Farník	CTU, Student Chamber
Bc. Barbora Kultová	CTU, Student Chamber, substitute member
prof. Ing. arch. Michal Kohout	Faculty of Architecture
prof. MUDr. Leoš Navrátil, CSc.	Faculty of Biomedical Engineering
Ing. Jakub Hospodka, Ph.D.	Faculty of Transportation Sciences
prof. Dr. Michal Pěchouček, MSc.	Faculty of Electrical Engineering
doc. Ing. Hana Kubátová, CSc.	Faculty of Information Technology
doc. Mgr. Milan Krbálek, Ph.D.	Faculty of Nuclear Sciences and Physical Engineering
prof. Ing. Michal Polák, CSc.	Faculty of Civil Engineering
prof. Ing. Zbyněk Šika, Ph.D.	Faculty of Mechanical Engineering

Working Legislative Committee
RNDr. Petr Olšák

Working Economic Committee
doc. Ing. Jiří Cajthaml, Ph.D.

Working Committee for Educational Activities
doc. Ing. Jiří Cajthaml, Ph.D.

Working Committee for Scientific Activities
prof. Ing. arch. Michal Kohout
doc. Mgr. Milan Krbálek, Ph.D.
prof. MUDr. Leoš Navrátil, CSc.
prof. Ing. Michal Polák, CSc.
prof. Ing. Zbyněk Šika, Ph.D.

Working Committee for Strategy and Development of Higher Education
Bc. Barbora Kultová

Working Committee for Quality Assessment of Universities
prof. Ing. arch. Michal Kohout
doc. Ing. Hana Kubátová, CSc.
prof. MUDr. Leoš Navrátil, CSc., MBA

Working Committee for External and International Relations
doc. Jakub Hospodka, Ph.D.

Student Chamber of the Council of Universities
Bc. Michal Farník, delegate
Bc. Barbora Kultová, substitute delegate

1.5. Mission, vision, strategic goals of CTU

Mission and vision

Mission of CTU

"In the future we want to remain a research university that will educate further generations of graduates and scientists with technical and general skills to satisfy the fast-changing requirements and needs of the decades to come."

Vision of CTU

"The Czech Technical University in Prague will strengthen its position as a leading technical university in the Czech Republic, and its position as a globally recognized research university that develops the talent and competences of its students, academic and other workers. It will strive to fulfil its function as a respected authority in education, scientific, research, artistic and engineering creative activities, for which it will use the experience of the previous generations of engineers and architects and the skills of the current and future academic workers and students."

In 2018, CTU in Prague continued to strengthen its position as a leading and sought-after research university within the European and global educational area with a demanding but encouraging approach to students. In the field of science, CTU was a respected partner for leading institutions in Europe and around the world. At the same time, the university endeavoured to deepen its relationship with the Czech Academy of Sciences. In the field of research and innovation, CTU aims to maintain its leading position in cooperation with the industry and the public administration. The university has been establishing conditions in support of innovation potential, artistic and other creative activities, transfer of technologies and transfer of knowledge for society. CTU believes that increased competitiveness will be ensured through deeper cooperation with selected universities, located in Prague as well as outside Prague, possibly leading to integration of study programmes. CTU has been raising awareness of the need to provide support for technical education, for science and research in technical disciplines. The cooperation with high schools was developed in an appropriate manner.

The university is significantly involved in cooperation with innovative branches of industry; its share in the application of new technologies in practice increases every year. For example, the gradual launch of research programmes of the Faculty of Mechanical Engineering in the field of aviation and aerospace industries, of the Faculty

of Electrical Engineering in the field of artificial intelligence and the programmes of CIIRC in advanced industrial production represent a challenge and a chance for interdisciplinary synergic cooperation within CTU, Czech economy and the global industry.

In order to fulfil this vision, there is a need not only for a high level of education and research activities based on cooperation between faculties and other constituent parts of the university, but also for more efficient linkages with Czech and foreign universities in the field of education, science and research. Exchange of leading teaching and research staff, closer contact with foreign universities, student exchange and mobility, which are all aspects of internationalization of education, science, and research, form an integral part of this effort.

Internationalization concerns all university employees and affects all activities at CTU in Prague, including educational, scientific, research and creative activities and services that will strengthen CTU's ability to defend its position in the competitive environment of Czech and European universities.

The newly established cooperation with EuroTech, the European alliance of excellent universities, has become a significant milestone.

Strategic goals

In 2018, CTU's strategic goals drew from the basic strategic documents of the Czech Republic in the field of education, research and development, the National Innovation Policy, the Long-Term Development Plan for CTU for the years 2016–2020, the 2018 Update of the Long-Term Plan and the CTU Strategy.

Through its educational and scientific activities and cooperation with industry, CTU will pursue as its main goal the development of the human potential in the field of technical and natural sciences in order to increase the competitiveness of the Czech Republic on European and global scale. The range of solved topics has been extended to include applications in social sciences and medicine, "traditional" technical branches and defence. Another crucial aspect is the development of moral, ethical and human values and preserving the base sum of knowledge necessary for the survival of the technological society.

For instance, the preparation of the operation of prg.ai, an organization focused on AI, as a platform for advanced research on global level represents an important step into the future.

1.6. Changes in internal regulations in 2018

In 2018, the following changes were made in the CTU internal regulations:

- Changes in the CTU Statute – with effect from 1 February 2018
- Changes in the CTU Statute – with effect from 22 February 2018

- Changes in the CTU Statute – with effect from 1 September 2018, or from 19 June 2018
- Changes in the Study and Examination Rules for Students at CTU – with effect from 19 June 2018
- Changes in the Study and Examination Rules for Students at CTU – with effect from 29 November 2018
- Changes in the CTU Rules for Granting Scholarship – with effect from 22 February 2018
- Changes in the Rules of Procedure of the CTU Academic Senate – with effect from 19 June 2018
- Rules for the System of Ensuring Quality of Educational, Creative and Related Activities and Internal Quality Assessment of Educational, Creative and Related Activities at CTU – with effect from 19 June 2018

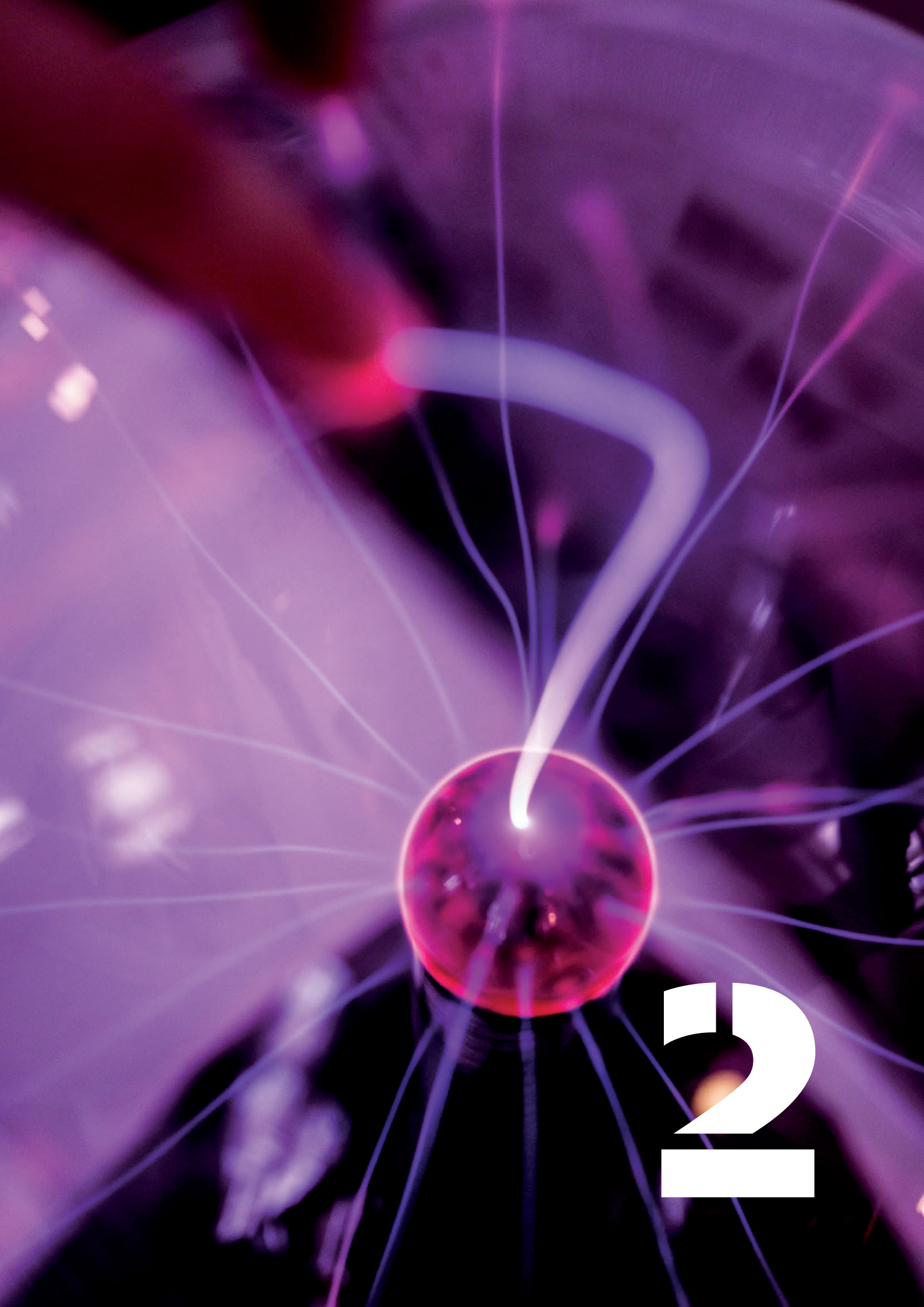
1.7. Disclosure of information pursuant to Section 18, Act No. 106/1999 Coll., on Free Access to Information

Rector's order No. 10/2007 was issued at CTU to apply Act No. 106/1999 Coll., on Free Access to Information. In 2018, the following numbers of items were processed pursuant to this Act:

Number of applications	8
Number of decisions to reject an application	0
Number of appeal notices against decisions to reject an application	1
Number of complaints lodged pursuant to Section 16a of the Act	0

Costs of representing the university amounted to CZK 1.7m.

See also https://www.cvut.cz



2. Study programmes, organization of studies and educational activities

2.1. Number of accredited study programmes according to methodology pursuant to Qualifications Framework for Tertiary Education

The Faculty of Civil Engineering, the Faculty of Mechanical Engineering, the Faculty of Electrical Engineering, the Faculty of Nuclear Sciences and Physical Engineering, the Faculty of Architecture, and the Faculty of Transportation Sciences do not organize any accredited study programmes described by the methodology of learning outcomes in accordance with the National Qualifications Framework for Tertiary Education in the Czech Republic.

The Faculty of Biomedical Engineering does not organize any accredited study programmes described by the methodology of learning outcomes in accordance with the National Qualifications Framework for Tertiary Education. This is mainly due to the fact that a major part of the fields of study at the Faculty of Biomedical Engineering prepares students for the exercise of specific regulated professions in accordance with Act No. 96/2004 Coll., on Conditions for the Obtaining and Recognition of Qualifications for Pursuing Paramedical Professions and for Carrying out Activities in Connection with the Provision of Health Care and the Amendment to Some Related Acts (Act on Paramedical Professions), as amended. These include the following fields of study: Biomedical Technician, Optics and Optometry, Physiotherapy, Radiological Assistant,

Medical Rescuer, Medical Laboratory Technician and Biomedical Engineer. All these fields have received an approval of the Ministry of Health of the Czech Republic for the given specialization and are developed in accordance with the valid legislation (among other things, they respect the required number of hours of practical training and the ratio of practical and theoretical instruction). Requirements for study fields in terms of content are further specified by Decree No. 39/2005 Coll., in terms of activities by Decree No. 55/2011 Coll. as well as by the specifying methodical guidelines of the Ministry of Health of the Czech Republic, in particular part 10/2010 for the fields of study Biomedical Technician and Biomedical Engineer.

The Faculty of Information Technology implements 6 study programmes described by the methodology of learning outcomes: a bachelor study programme in full-time and part-time form, a bachelor study programme in English, two master study programmes in full-time form and a master study programme in English.

The Masaryk Institute of Advanced Studies has described a bachelor study programme B7507 Specialization in Pedagogy in the field of Teacher Education.

2.2. Major educational activities at CTU (apart from accredited study programmes)

In line with CTU's role in society, all constituent parts of CTU implemented a number of educational activities beyond accredited study programmes. The individual constituent parts consider as most important the following:

In 2018, **the Faculty of Civil Engineering** approved and supported 65 specialized excursions, including excursions abroad, and 19 field trips for which the faculty uses the educational facilities in Telč, Mariánská, Srbsko and the Underground Educational Facility Josef. The faculty organized lectures by outside experts and experts from other specialist workplaces as well as conferences, exhibitions, workshops, seminars and student competitions.

For example:

- As part of the series of lectures under the name "What is Architecture", the faculty welcomed Martin Gsandtner, Martin Rajniš, Vladimír Šlapeta, Filipa Hejzlar, Václav Aulický and the architectural studio BOD architekti.
- The faculty established so-called Technical Thursdays, during which students can get acquainted with interesting current issues in construction.
- The faculty organized the 9th edition of the "Nano and Macro Mechanics 2018" conference, as well as 22 different scientific student conferences.
- A total of 12 exhibitions of student architectural projects were organized outside the faculty building. The staff at the Department of Architecture participated in preparing exhibits for the exhibition "The Magical House of Luxembourg" as well as for the permanent exhibition "Prague of Charles IV – A Grandiose Building Site in Europe". Traditional exhibitions of drawings by students of the Architectural Drawing made in

the countryside around Telč and in the National Museum of Agriculture and the National Technical Museum in Prague were held.
- The faculty organized over two dozen different thematic workshops, including the Workshop CESTI 2018, Research and Modelling of On- and Off-site Effects of Soil Erosion and Sediment Transport, Development and Validation of Numerical Models, Staircase Structures – Artisan Renovation of Historical Buildings, Vertical Structures - Artisan Renovation of Historical Buildings, Workshop II – A Vision for Škoda Auto and Mladá Boleslav in the 3rd Millennium.
- The TZB summer school and the summer and winter schools in Telč (Scola Telcz) and the Summer School of Architecture and Civil Engineering, Atelier D: The First Republic were organized.
- Student competitions were held in cooperation with, for example, Saint Gobain ISOVER, Xella, Dřevo pro Život foundation, Callida and SMP Vinci. Students took part in competitions organized by ASC - Associated Schools of Construction – the Faculty of Civil Engineering hosted the 2018 edition of this international competition.
- The Faculty of Civil Engineering signed a memorandum on cooperation with six leading educational and research institutes that operate in Telč (Masaryk University, Danube University Krems, the Czech Technical University in Prague, the Slovak University of Technology in Bratislava, the National Heritage Institute, the CAS Institute of Theoretical and Applied Mechanics). The document includes a provision on exchange of academic and non-academic staff, exchange of students, cooperation among teachers, cooperation on scientific research and sharing of common research results among individual institutions.

In 2018, **the Faculty of Mechanical Engineering** organized one professional welding course for the faculty's students and primarily for practitioners who have this course prescribed as part of their qualification; alternatively, the costs of the course are covered by Labour Offices as part of requalification courses.

In 2018, the Institute of Mechanics, Biomechanics and Mechatronics organized a Summer School of Composite Materials focused primarily on strength calculations for parts made of composite materials.

In 2018, regular lectures were held by outside experts on the topic: "One Day at Work of an Engineer at a Company". In addition to concrete examples of an engineer's workload, the participants got acquainted with profiles of the participating companies and had an opportunity to establish cooperation with them. Another level of this activity includes regular workshops under the auspices of individual companies and specialized excursions.

In 2018, the Department of Automobiles, Internal Combustion
Engines and Railway Vehicles organized a regular series of meetings focused on vehicles and, in the first place, electromobility and its development.

A series of meetings with technology for primary and high school students was held on Karlovo Square in 2018 under the title "See What's Inside". The event was co-organized by the Faculty of Mechanical Engineering CTU and the National Technical Museum in Prague.

The Faculty of Electrical Engineering organized preparatory courses for those interested in studying at the faculty as well as for newly admitted students. The faculty also offered lectures for the professional public (http://www.fel.cvut.cz/en/prestudent/stredoskolske-aktivity.html). Lifelong learning courses include all subjects that are taught in the framework of accredited study programmes at the Faculty of Electrical Engineering CTU in the winter and summer semester. Like every year, the faculty organized a number of courses for the University of the Third Age for people who consider the broadening of their expertise and professional skills an indispensable part of a fully-lived life. The courses are designed for seniors over the age of 55 who receive old-age pension and have no other income. In addition, the faculty organizes a loose series of lectures and seminars called Thursdays with Physics, designed for students, their teachers, specialized workers and the general public. Other educational activities include, among others: Christmas with Physics, a one-week summer course with sports, a course of practical electronics, an autumn school for high school teachers, summer coding events and others.

The Faculty of Nuclear Sciences and Physical Engineering organizes a wide range of lectures and courses beyond standard instruction:

Be a Medical Physicist for One Day

17 January and 30 May 2018

What is it like to work as a radiology physicist or technician in a hospital and what is the employability of our graduates? These questions were answered during the event titled Be a Medical Physicist for One Day. In 2018, it was held at the faculty on 17 January and 30 May. The programme included specialized lectures, practical exercises with an X-ray machine and radionuclide irradiator, the development of a radiation plan for oncology patients and a visit to the Motol Hospital or the Thomayer Hospital. High school students had the possibility to tour individual workplaces, see different equipment and talk to the hospital staff about their work.

One Day at FNSPE

The event is aimed at high school students with an interest in science and technology. In 2018, we created a programme especially tailored for eight high schools. Our department was visited by 16 teachers and 216 students who visited the Department of Dosimetry and Application of Ionizing Radiation, the Department of Solid State Engineering, the Department of Materials, the Department of Nuclear Chemistry and the Department of Physical Electronics in Prague-Troja. Excursions to Tokamak Golem and the university nuclear fission reactor VR-1 were especially popular.

Excursions for teachers

10 June 2018

On 10 June, Vojtěch Svoboda explained to 15 teachers the potential of the thermonuclear fusion at Tokamak Golem and showed them this unique equipment that is operated at the faculty. The visit was organized by the leadership of the regional centre of the Elixir to Schools project in Ostrava.

Be a Woman Scientist for One Day

12 February 2018

On Friday, 10 February, the faculty organized an event Be a Woman Scientist for One Day, subtitled "Measurement of the Proton Structure Using the W Boson in the ATLAS Experiment at the LHC", which was aimed at female high school students. In this way, the faculty joined the international project, organized in cooperation with the International Particle Physics Outreach Group (IPPOG), the European Physics Society (EPS) and CERN at the occasion of the International Day of Women and Girls in Science (11 February). In 2018, the event was attended by 24 female students from the Czech Republic, who were able to compare the results of their research with female students from Université Paris Diderot (France), Università della Calabria (Italy), University College London (UK) and the University of Lund (Sweden).

MasterClasses

8 March 2018

On 8 March, as part of the International MasterClasses project an event was held at FNSPE, where high school students had an opportunity to work with data from CERN laboratories and compare their results with other students from foreign universities as well as directly with scientists at CERN. This year, there were two topics: "Searching for the Higgs Boson from Z0 Decay in the ATLAS Experiment at the LHC" and "Measurement of the Lifetime of the Charm Particle D0 in the LHCb Experiment at the LHC".

The event was attended by a total of 53 high school students (of which 28 attended ATLAS and 25 LHCb).

Week of Science at FNSPE

17 to 22 June 2018

The Week of Science at FNSPE, which this year was held on 17-22 June, has become a tradition. It attracted a total of 150 students from dozens of high schools from the Czech Republic and Slovakia. Employees at the faculty led 49 mini-projects, organized 12 excursions and 17 popular-science lectures. As part of an introductory event, students took part in the Fort Břehyard game, inspired by the popular Fort Boyard game. Instead of physical performance, however, students had to tackle tasks from mathematics, chemistry, physics and other logical tasks. At the end of the game, the individual teams could monetize their award in a statistical game, Casino. From Monday, all participants got to work in the labs, using various instruments or taking measurements outside as part of their mini-projects. At the end, in order to get a full insight into scientific work, the participants had to summarize the results of their research into a scientific article and present it at the final conference.

Preparatory course in mathematics and physics:

Open to anyone who is interested, this free course runs from November to April and is focused on the revision of selected areas of high school mathematics and physics and the solution of typical exercises that will help attendants prepare for study at technical

universities, in particular. During lectures on physics, attention was also paid to certain new areas in physics. The course consisted of a total of 18 lessons and was attended by an average of 30 students.

Introductory workshop of the Young Physicists' Tournament

19 October 2018

A demonstration of a combat in physics, lectures on tasks for the 2018–2019 school year and personal experience – this was in store on 19 October 2018 for 70 high school students who decided to take part in the International Young Physicists' Tournament. This year's programme was prepared by lecturers from FNSPE, CTU in Prague, the Palacký University in Olomouc and the Institute of Physics of the Czech Academy of Sciences. The event aims to acquaint newcomers with the tournament, help students and their teachers to get to know the tournament better and achieve good results. The Young Physicists' Tournament is organized under the auspices of the Union of Czech Mathematicians and Physicists.

High school competitions

The faculty supports or participates in the organization of a number of year-long high-school competitions and projects, either in the capacity of mentors, evaluators or direct organizers.

- Olympics – in chemistry, mathematics and physics
- Students' Professional Activities
- AMAVET
- Young Physicists' Tournament

Popular-science lectures at high schools:

Subjects in the field of natural sciences are still popular among high school students, so our employees and students present popular-science lectures offered on our website at grammar schools and high schools across the Czech Republic. In 2018, more than 20 such lectures took place, providing a welcome addition to the traditional physics or mathematics lessons at high schools.

Excursions to the school's nuclear reactor VR-1 and Tokamak GOLEM:

Throughout the year, independent excursions to the school's nuclear reactor VR-1 and Tokamak GOLEM were organized for high school students. In addition, both facilities were visited by foreign students or guests as part of courses, workshops or conferences.

Young Minds

The Prague section of EPS Young Minds that unites students from FNSPE CTU, the Faculty of Mathematics and Physics, Charles University, and other universities aims to popularize science among young people and increase their interest in the study of scientific disciplines. Young Minds organizes events that give students the opportunity to informally introduce their research, as well as events where students have the opportunity to meet experienced scientists in their field in an informal setting. The main

events of Young Minds include the New Semester Party (a lecture by renowned scientists followed by a reception) and the Physics Pizza Party (a series of student lectures for students where pizza is served). This year's guests of the New Semester Party were prof. Ing. Igor Jex, DrSc., who talked about "Star Trek Physics", and prof. RNDr. Jiří Podolský, CSc., DrSc. on the subject of "Gravitational Waves". The Physics Café is yet another event, where young students and academicians meet in Prague cafes and discuss current topics in physics. Young Minds also participates in the organization of MasterClasses.

3-5 May 2018

A meeting of representatives of EPS Young Minds sections was held. The panelists included Rüdiger Voss (President of the European Physical Society), Jan Mlynář (President of the Czech Physical Society), Vojtěch Petráček (Rector, CTU in Prague), Vlastimil Růžička (Rector Emeritus, University of Chemistry and Technology) and Jan Řídký (Vice-President, Czech Academy of Sciences).

16 June 2018

At the occasion of the 90th anniversary of the Airship ITALIA expedition, the participation of Prof. František Běhounek in the expedition and the 120th anniversary of his birth, a commemorative sioreé was organized on 13 June 2018 in room no. 103 on Břehová Street. During the evening, participants listened to lectures by Petr Sládeček titled "The Known and the Unknown Expedition of Airship Italia" and by Dana Mentzlová under the title "Radio Station of the Italia Expedition and Prof. Běhounek through the Eyes of Contemporaries and Students".

Faculty colloquium

This is a regular series of lectures in the framework of which Czech and foreign experts present the latest research results in an accessible form. The colloquium is intended for a wide audience, consisting of the faculty's academic community including students, guests and visitors from outside the faculty. In 2018, a total of 18 lectures were held on various specialized topics. From the summer edition, we should definitely mention the lecture by Martin Ferus from J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences on the subject of the "Research of the Effects of Frequent Asteroid Impacts on Early Earth Chemistry"; in the winter edition it was Prof. Sergei V. Bulanov from the Kansai Photon Science Institute, JAEA, Japan, who also works at ELI-Beamlines, with his lecture on "Super Powerful Lasers: Paving the Way to Relativistic Laboratory Astrophysics". Throughout the whole year, colleagues from individual faculties of CTU also gave lectures that were part of the series 310 years of CTU.

The University of the Third Age

The University of the Third Age at FNSPE combines lectures on the history of physics with popular scientific lectures and excursions to scientific departments with active participation in selected experiments. In addition to the permanent programme, the participants can also attend other events held at FNSPE, such as the faculty colloquia, the physical seminar, practical classes at the Department of Physics and others.

University for Kids

This one-week event, organized and guaranteed by the CTU Rector's Office, is intended for primary school pupils who have completed grades 1 to 8 or for pupils of the corresponding years at multi-year grammar schools. In 2018, the 4th edition was held.

Events in Děčín

Special Theory of Relativity

18 January 2018

The 5th edition of the lecture "Special Theory of Relativity" for high schools was organized by the FNSPE detached department in Děčín. The lecture given by Mgr. Pavel Stránský was attended by around 250 students.

Tuesdays with Science

In 2018, a total of 10 lectures were held, attended by around 400 people, which is indicative of a growing interest on the part of the general public. The most interesting was probably the lecture by plk. Ing. Hana Šuláková at the Institute of Criminalistics under the title "What Insects Can Tell Us (Not Only) about a Dead Body".

Lectures at high schools

Lecturers (Bc. Josef Drobný, doc. Miroslav Virius, RNDr. Petr Kubera, Ing. Michal Moc) presented their lectures at various high schools in the region (Secondary Technical School Česká Lípa, Secondary Technical School Ústí nad Labem, Secondary Technical School Teplice, Grammar School Varnsdorf, Grammar School Česká Kamenice), complementing the lessons with interesting insights from current applied research and development.

Coding for kids

A coding club for kids, led by Martin Švamberg, is held every Monday. The aim is to acquaint children with the basics of coding, teach them logical thinking and the principles of writing algorithms. The club has technical equipment at its disposal that the children can use to practice their skills and programmes.

Cooperation with Grammar School Děčín

In 2018, the FNSPE detached department in Děčín established partnership with Grammar School Děčín. A seminar for talented students at the grammar school was launched and it took place in our computer laboratories. Dr. Aurél Gabris was invited to give two lectures on physics to the students in English. Together with our students, the students at the grammar school attended a lecture of Dr. Jiří Grygar that took place at FNSPE in Prague.

The Faculty of Architecture organizes lectures, conferences and workshops for students that provide them with the opportunity to extend their knowledge in the field through confrontation with leading architecture practitioners and theoreticians. Also manual workshops in the spirit of "learning by doing" contribute to the extension of knowledge.

Lectures

A series of lectures by leading Dutch architects "November Talks":

- Marc Barani
- Vasa Perović
- Mario Corea
- Grégoire Zündel

A series of lectures "Monuments 2018":

- Ján Stempel: The Village House and its Forms
- Martin Horáček: A United Theory of Architecture
- Václav Šedý: A Photographer's Relationship to Architecture
- Kristýna Uhlíková: The Land Reforms and Historical Noble Estates in Czechoslovakia
- Petr Hájek: The Waterworks Tower in Letná and Its Restoration
- Martin Mádl: Ceiling Paintings in St. Markéta's Church in Břevnov
- Petr Urlich: Famous Villas in Prague 6
- Jan Pešta: Three Baroque Monasteries (Česká Lípa, Cheb, Valtice)
- Václav Girsa: Preservation and Restoration of the Baroque Theatre at the Castle in Český Krumlov
- Prof. Gojda: Historical Landscape I – Landscape as a Phenomenon and a Bearer of Historical Memory
- Prof. Gojda: Historical Landscape II – Development of Landscape from Late Prehistory to Early Middle Ages
- Prof. Gojda: Historical Landscape III – Landscape in High Middle Ages to Modern Era and its Legacy Today
- Ivan P. Muchka: Sculpture in Public Space – Radecký in Bohemia and Bavaria
- Václav Girsa: 2 Castles, 2 Approaches, 2 Provocations

One-off lectures:

- Tomáš Valena: Plečnik
- Sara Eloy: Science in Architecture

Conferences:

- The City – An Initiator of Development
- Stocktaking of Typology
- Student Conference Wood Structures and Energy Efficient Wood Buildings
- MERGE Conference of Architectural Visualisations
- Affordable Housing
- Community Housing – How to Do It?
- Design Computing
- How We Wanted to Live – Housing Architecture and Its Support after the Establishment of Czechoslovakia
- Mě100 Conference
- GIS Esri Conference
- Contemporary Staircases 2018: Architecture and Structure
- International Conference Architecture to Children: Children and the City, a Space to Play

- Politics of Architecture: Current Topics
- PROPAMÁTKY Conference
- Stocktaking of Urbanism 2018
- What is Sustainable Architecture?
- Student Scientific Conference 2018

Workshops and seminars

- Culture Venues "Kulturáky"
- Space Syntax (Akkie van Ness)
- Using Standards in Designing Spaces for Play
- Using 3D Print in Production of Models

Exhibitions

- Foootbridges to the Krkonoše Mountains
- Family Houses in Visegrád Four Countries
- The Best Urbanistic Projects
- Staircases
- Visions and Reality in Czech and Slovak Architecture 1918-2018
- Exhibition of Novotný – Koňata – Zmek Architectural Studio, Kutná Hora
- Žižkov Freight Railway Station in the Eyes of Students
- How We Wanted to Live
- Wood Structures and Energy Efficient Wood Buildings and the Timber Construction Show
- DIZ ARCHIBeton Exhibition
- The Parallel World of the Angels
- Exhibition of Diploma Projects Defended in Winter Semester of the Academic Year

In 2018, the 29th international students' transportation and engineering seminar with international participation of students from universities specializing in transporation sciences, MEPS 2018 (Middle European Project Seminar 2018) was held at **the Faculty of Transportation Sciences** in 2018. The seminar took place from 27 May to 1 June 2018 in the city of Eger, Hungary. Three academic workers and 12 students participated in the seminar as representatives of the Faculty of Transporation Sciences, which co-organized the event. The seminar was held as part of an educational programme with international participation of students from universities specializing in transporation sciences (namely, the Faculty of Civil Engineering, Budapest University of Technology and Economics, Hungary; the Faculty of Civil Engineering, Vienna University of Technnology, Austria; and the Nikolai Nikolaevich Polykarpov Technological Institute, Ivan Sergeyevich Turgenev Orel State University, the Russian Federation). The seminar's aim was the solution of specific transportation problems of the city. Students from all participating universities cooperated on selected project assignments under the guidance of experienced teachers in equal representation so that students could benefit from developing and enriching their language skills with elements of common communication, but primarily with specialized transportation terminology. The final presentation of the solved tasks was attended by representatives of all four universities and the city Eger.

The Faculty of Transportation Sciences is a body accredited by the Ministry of Transport of the Czech Republic to provide training for road safety auditors. The 6th training session for road safety auditors took place on 24-26 October and 29-30 November 2018. Taking part in this training is one of the requirements for demonstrating professional competence pursuant to Section 18(i), Para 3 of Act No. 13/1997 Coll., on the Road Network, as amended, for obtaining a licence to work as a road safety auditor from the Ministry of Transport of the Czech Republic. The training session comprises 40 lessons and consists of three days of theoretical lectures and two days of practical exercises. The training focuses on traffic accident theory and road safety, building roads that are safe for road users, and legal and technical standards regulating road safety and road safety audits. At the same time, a regular training for road safety auditors to extend the validity of their licence pursuant to Section 18(j), Para 4 of Act No. 13/1997 Coll. for active road safety auditors was held on 24-25 October 2018. The training was focused on deepening of practical knowledge of road safety and auditing and inspection of road safety. Particants were also acquainted with the current concept of new legal and technical standards regulating road safety.

Several faculty members participated as teachers in the University for Kids organized by CTU in Prague, which took place in July 2018.

On 16-22 June 2018, the Summer School for students of the Faculty of Transportation Sciences and Westsächsische Hochschule Zwickau, Fakultät Kraftfahrzeugtechnik took place at the detached department in Děčín. The Summer School was organized as part of a transboundary cooperation project SN/CZ No. 100251050 Use of Modern Visualization and Simulation Technology in Road Systems; workshops focused on construction of a vehicle simulator, use of 3D computer graphics in transport or interactive simulation were attended by 8 students from WHZ and 5 students from CTU.

In the framework of lifelong learning, **the Faculty of Biomedical Engineering** implemented a course for the University of the Third Age under the name "Molecular Biology" in 2018, which was a loose continuation of a course on genetics. During the course, students were acquainted with elementary molecules, molecular genetics terminology and explanation of certain methods, including genetic manipulation – genetic engineering and cloning. As a bonus, participants could attend lectures by outside practitioners (on prenatal genetic) and researchers (on immunogenetics). Students of the University of the Third Age were also shown the real patient simulator in the Simulated Intensive Care Unit laboratory and learned about the possibilities it offers to the faculty's students in practical classes. In the winter semester, the classes of the University of the Third Age focused on humans and their place in the living nature. A course titled "Human Beings and Their Development" was a follow-up of the previous course on "Human Biology". The course consisted of lectures on contemporary findings in the field of human phylogeny and ontogeny, current questions concerning nutrition, health and in particular the impact of today's environment on human organism. As a bonus, participants in the course could get their eyesight checked by students of the bachelor field of study Optics and Optometry.

In 2018, the Faculty of Biochemical Engineering organized or co-organized the following scientific conferences and specialized workshops.

On 4 April, the Department of Natural Sciences held the second student scientific conference with international participation under the title "Forum of Optics and Optometry 2018" with the participation of students and graduates of the field of study Optics and Optometry and with the support of a SVK project and cooperating companies (Cooper Vision, TOPCOMED).

On 16 April, the faculty, in cooperation with the Society for Radiobiology and Crisis Planning of CzMA JEP, organized a conference on the "Possibilities of Rehabilitation in Affecting Pain Conditions", which was intended for students, doctors of all specializations and experts in paramedical professions.

From 26 to 29 April, a study workshop for students of the field System Integration of Processes in Health Care took place. Its aim was to extend the students' knowledge and skills in the field of medical machines and equipment, acquaint them with new trends in the field of medical technology, enhance the quality of students' scientific theses on the given topic, increase cooperation between students and provide updates on legislation concerning medical devices.

On 10 May, the eighth edition of the student conference entitled "Instruments and Methods for Biology and Medicine 2018" took place. Papers presented at the conference in English covered a broad range of topics including biomedical nanotechnologies, molecular biology, genetic engineering, biosensors, physical diagnostic and therapeutic methods, biomechanics, optics and more.

On 10 May, the faculty co-organized the 22nd edition of the student scientific conference POSTER. The majority of the participants were students of doctoral study programmes from the Czech Republic and abroad.

On 17 May, the Department of Biomedical Technology organized an international conference/collaboration workshop entitled "Early Assessment of Medical Devices" focused on cooperation in the development of methods for HTA applied to medical devices.

On 9 July, the faculty, together with the Society for Radiobiology and Crisis Planning of CzMA JEP and under the auspices of MUDr. Věra Adámková, CSc., chair of the Committee on Health Care of the Chamber of Deputies of the Parliament of the Czech Republic, organized a national conference under the title "Preparedness of Health Care Centres for Emergency Situations". The event included lectures by experts at the Department of Health Care and Population Protection, faculty hospitals, the National Institute for Nuclear, Chemical and Biological Protection, the Ministry of Health of the Czech Republic, the Police Academy of the Czech Republic and the Association of Emergency Medical Services of the Czech Republic.

From 5 to 9 September, the seventh edition of the student conference under the title "Respiratory Days" was organized by Prof. Roubík's research group as part of student scientific conferences. Leading Czech researchers and managers of anaesthesiology and resuscitation departments and intensive care units participated in the event. For the first time this year, a round table on "Breathing in Avalanches" was included in the conference.

On 12 October, the eighth edition of the student scientific conference under the title "Aspects of the Work of Helping Professions – AWHP 2018" took place at the Medical House (Lékařský dům) in Prague. The event offered a number of interesting lectures. A total of 12 posters were presented in the poster section.

The Faculty of Biomedical Engineering was among the organizations that participated in the preparation of the international event titled "Future Forces Forum", which was held on 17-19 October in Prague. Representatives of the faculty were members of the preparatory committee and were actively present at the "World CBRN & Medical Congress" (CEBIRAM), which was part of the event.

On 22 November, at the occasion of the 6th FyzioCafé in Kladno, the faculty welcomed Mgr. Petr Šádek, who had returned from a scientific stay abroad and who talked about Physiotherapeutic Methods in the Age of Evidence Based Medicine (What's Happening in Patient's Body during Therapy?). The lecture had high attendance numbers and it was greatly received by the attending students, who also asked many questions.

On 11 December, the Department of Biomedical Technology organized a conference entitled "Electrical Heart Signals: From Myocardial Potentials to ECG". The conference focused on presentation of research projects of faculty's students, doctoral students and researchers who study cardiac electrophysiology and processing of electrical signals of the heart. The conference's main aim was to present the results of scientific and research activities of students and doctoral students, including raising awareness of defended or prepared research projects in the given field and getting inspiration in the selection of the topics of bachelor, master or doctoral theses.

On 12 December, the Faculty of Biomedical Engineering (Department of Health Care and Population Protection) together with the Faculty of Military Health Sciences of the University of Defence and the Society for Radiobiology and Crisis Planning of CzMA JEP co-organized an event under the title "Interaction of Ionizing Radiation with a Living Organism" focused on the complex issues of radiosensitization of tumour cells, radiobiological efficiency of protons, current trends in biodosimetry, the use of mesenchymal stem cells for muscle and bone regeneration and other current topics related to the use of ionizing radiation in medical practice. This specialized event served as a meeting place for leading experts in this field and provided participants with the opportunity to learn more about the current results of various research projects related to the use of ionizing radiation.

On 14 December, a student scientific conference of the field of study Systematic Integration Processes in Health Care took place, at which results of scientific work conducted by students of this field were presented. The aim of the conference was to enhance and support scientific and research activities of students, enhance quality and efficiency of students' scientific work and develop students' verbal and communication skills. At the conference students presented results of their scientific projects. The projects were divided into eight sections according to their specialized focus. The most popular sections included the assessment of medical technology, the public health care system and economy, economic analyses in the field of physiotherapy and information technology in health care. Each student presented their project before an expert

committee. The projects that the multi-member committee selected as best and the best presentations received awards.

Each year, the Faculty of Biomedical Engineering co-organizes the discussion sessions "Science Café". In 2018, a total of nine sessions took place at the faculty. The events are intended for students, employees and the general public.

In 2018, **the Faculty of Information Technology** held many regular and one-time lectures and seminars and organized and co-organized a number of conferences intended for students, employees and the general public.

Since 2009, the faculty has organized a series of lectures in informatics under the title "Informatics Evenings at FIT". A total of 16 lectures were held in 2018; topics of some of them were provided also by partner companies T-Mobile, Barclays, Profinit and Komerční banka.

In addition, the faculty held another regular series of five lectures and workshops under the title "JavaScript Developer Meetups", which focuses on topics like JavaScript, AngularJS and other similar technologies.

Each year, several one-off lectures take place. In 2018, they were the following ten:

- 20 December 2018 – Asynchronous. NET
- 22 November 2018 – Angular
- 9 November 2018 – Accelerating Data Science at the Edge Using FPGAs
- 8 November 2018 – Testing and Continuous Integration of. NET applications
- 9 October 2018 – 10 Things I Wished I Knew before I Started My Career in Data-science
- 6 June 2018 – Parallel Non-Negative Matrix Factorization (NMF) and Its Use
- 4 June 2018 – Reconstruction and Search for Images Using Parallel Singular Value Decomposition of Matrices
- 9 May 2018 – The Art of (Self) Presentation
- 25 April 2018 – Marketing
- 5 March 2018 – Visualizing Deep Neural Networks

In 2018, the faculty also organized or co-organized a number of conferences:

- 6-7 October 2018 – LinuxDays 2018
- 29-31 August 2018 – Euromicro DSD/SEAA 2018
- 29-31 August 2018 – Summer StringMasters 2018
- 27-28 August 2018 – The Prague Stringology Conference 2018
- 22-25 August 2018 – Human-Level AI 2018
- 28-30 June 2018 – The 6th Prague Embedded Systems Workshop
- 1-3 June 2018 – PyCon CZ 2018
- 25-27 May 2018 – openSUSE Conference 2018
- 21 May 2018 – LAW FIT 2018
- 3-4 March 2018 – InstallFest 2018
- 14-15 February 2018 – Prague PostgreSQL Developers Day 2018

As part of university activities, the faculty participated in events intended for the general public:

- 9 June 2018 – Museum Night
- 5 September 2018 – Science Festival
- 5 October 2018 – Night of Scientists

Several educational activities were also aimed at high school students. The faculty organized the 5th year of the FIKS competition – FIT's Informatics Correspondence Seminar.

The faculty also held the first edition of a unique two-week coding course "Introduction to Computer Science". The aim of the course was to arouse interest in coding in 100 high school students by teaching them the basics of coding in a fun way. The course took place at the faculty under the guidance of professors and students from Stanford University and FIT. The course was conducted in English.

The Summer IT School Czechitas focused on girls aged 14-19 years also took place in the faculty premises. For children from primary schools, the University for Kids was held at CTU during summer holidays, in which the faculty participated by offering a programme in laboratories.

Throughout the academic year, **the Masaryk Institute of Advanced Studies** organized lectures of outside experts, which complemented the educational activities carried out in the framework of accredited study programmes.

The third annual conference commemorating Albín Bráf was organized, which offers an inspirational space for the presentation of and discussion on topics and results of creative activities of students of various degrees and fields of economic-managerial and supplementary disciplines at technical universities, this time in an international format. Among others, two international projects that have an impact on the newly accredited bachelor and master study programme at the Masaryk Institute titled "Current Issues in Business from a V4 Perspective" were presented at the conference. The programme is supported from the International Visegrad Fund and its outputs include an eponymous subject taught by foreign teachers. Over 50 students at CTU successfully completed the course in the winter of 2018.

As part of the Modern Logistics Learning programme under Erasmus+ Strategic Partnerships, five EU schools prepared a block of certified modules for courses of logistics and management of the supply chain. From the 2019-2020 academic year, it will be included in the MIAS programme among elective subjects taught in the English language and students who complete this subject will receive a prestigious professional certificate issued by the European Logistics Association.

In 2018, specialized seminars and a workshop were organized in the framework of the Education Policy Fund of the Ministry of Education, Youth and Sports with the aim to increase the motivation and interest of students preparing for the teaching profession in the specific field of special pedagogy (typhlopedy). At the university level, these activities were linked to the Support Centre for Students with Special Needs ELSA, together with foreign experts who specialize in spatial orientation in visually impaired

individuals, including demonstrations of sports activities that disabled people can fully enjoy using special compensation aids. This is not the main professional specialization of the students of the MIAS programme for teachers. From the point of view of current pedagogical practice, students acquired basic professional competencies in the field of inclusive pedagogy for their future career as pedagogical workers, teachers of vocational subjects, or teachers of practical education and vocational training.

Thanks to the deepening cooperation between MIAS and Wuhan University of Technology, China, students in the first and second years of the bachelor study programme had an opportunity to participate in the Wuhan International Workshop, a two-week study and sightseeing stay in China. Students had the possibility to acquire knowledge and practical skills linked to innovations in retail banking. Students worked in international teams and focused on the complete process of innovation, from the creation of new ideas to designing strategies and plans.

A university section of the international organization Toastmasters (www.toastmasters.com) was established at MIAS. It is a well-devised system that develops presentation and communication skills of its members organized in clubs. The condition for membership is good knowledge of English and interest in active and long-term development of the above mentioned skills. Membership is open to students and employees at CTU, including foreign visiting teachers (who are often members in their home workplaces and can thus attend the meetings as guests). Since the autumn of 2018, the meetings (which take about an hour) have been held once a month.

The Night of Scientists at MIAS was accompanied by light images followed by a discussion and lectures "Czechoslovakia, October 1918: How to Successfully Take the Economy of an Emerging Modern State out of a Collapsing Superpower?", "The Predictable, the Unpredictable: The World in 2030", "The Vltava and the Labe in Bohemia: On the Two Cruises of Emperor Franz Joseph".

Representatives of MIAS; the Faculty of Electrical Engineering CTU; ERA-BHC CS, s. r. o.; Omnipol, a. s.; CybEe; and the Ambassador of Estonia to the Czech Republic signed an agreement on the provision of the Cyber Hygiene e-Learning Software platform. It consists of one thousand user licences for the needs of university students and employees that will be made available in cooperation with ERA-HBC CS, s. r. o., the distributor of this platform in the Czech Republic - for a period of two years – to selected academic workers and students at MIAS and at the Department of Telecommunication Engineering, Faculty of Electrical Engineering CTU. In this way, students will become familiar with one of the important tools for maintaining cyber security, while the software producer will receive qualified feedback. This will enable the company to further develop the product and be able to better use it in the academic environment, which has some special features as well as high demands on software equipment, among other things.

At the beginning of 2018, the MIAS CTU International Office team organized an international one-week programme under the title "Bootcamp" in Munich, Germany, intended for students of bachelor study programmes in economics.

2.3. Statistics of study programmes

Tab. 2.1

Accredited study programmes (number)										
Groups of accredited study programmes	**KKOV**	**Bachelor study programmes**		**Master study programmes**		**Follow-up master study programmes**		**Doctoral study programmes**		**TOTAL**
		P	**K/D**	**P**	**K/D**	**P**	**K/D**	**P**	**K/D**	
Faculty of Civil Engineering										
Technical sciences	21–39	6	0	1	0	9	2	8	8	**34**
Faculty of Mechanical Engineering										
Technical sciences	21–39	6	6	0	0	15	12	3	3	**45**
Faculty of Electrical Engineering										
Natural sciences	11–18	2	2	0	0	3	2	1	1	**11**
Technical sciences	21–39	16	11	0	0	20	9	2	2	**60**
Faculty of Nuclear Sciences and Physical Engineering										
Technical sciences	21–39	1	0	0	0	3	0	4	4	**12**
Faculty of Architecture										
Technical sciences	21–39	2	0	0	0	3	0	2	2	**9**
Culture and art	81, 82	1	0	0	0	3	0	1	1	**6**
Faculty of Transportation Sciences										
Technical sciences	21–39	2	2	0	0	2	1	6	6	**19**
Faculty of Biomedical Engineering										
Technical sciences	21–39	4	3	0	0	6	4	6	6	**29**
Health care, medical and pharmacological sciences	51–53	1	0	0	0	1	1	1	1	**5**
Faculty of Information Technology										
Natural sciences	11–18	2	1	0	0	2	0	2	2	**9**
University Institutes (studies outside faculties)										
Technical sciences	21–39	0	0	0	0	0	0	1	1	**2**
Social sciences and services	61, 67, 71–73	0	0	0	0	0	0	1	1	**2**
Economics	62, 65	2	0	0	0	1	0	2	2	**7**
Pedagogy, teacher training and social care	74, 75	1	1	0	0	0	0	0	0	**2**
Czech Technical University										
Natural sciences	11–18	4	3	0	0	5	2	3	3	**20**
Technical sciences	21–39	37	22	1	0	58	28	32	32	**210**
Health care, medical and pharmacological sciences	51–53	1	0	0	0	1	1	1	1	**5**
Social sciences and services	61, 67, 71–73	0	0	0	0	0	0	1	1	**2**
Economics	62, 65	2	0	0	0	1	0	2	2	**7**

Pedagogy, teacher training and social care	74, 75	1	1	0	0	0	0	0	0	**2**
Culture and art	81, 82	1	0	0	0	3	0	1	1	**6**
TOTAL		**46**	**26**	**1**	**0**	**68**	**31**	**40**	**40**	**252**

P = full-time study K/D = part-time study / distance study

Tab. 2.2

Study programmes in a foreign language								
Groups of accredited study programmes	**KKOV**	**Bachelor study programmes**		**Follow-up master study programmes**		**Doctoral study programmes**		**TOTAL**
		P	**K/D**	**P**	**K/D**	**P**	**K/D**	
Faculty of Civil Engineering								
Technical sciences	21–39	1	0	3	1	2	2	**9**
Faculty of Mechanical Engineering								
Technical sciences	21–39	2	2	3	2	2	2	**13**
Faculty of Electrical Engineering								
Natural sciences	11–18	1	1	2	1	0	0	**5**
Technical sciences	21–39	5	4	9	3	2	2	**25**
Faculty of Nuclear Sciences and Physical Engineering								
Technical sciences	21–39	0	0	1	0	2	2	**5**
Faculty of Architecture								
Technical sciences	21–39	0	0	1	0	1	1	**3**
Faculty of Transportation Sciences								
Technical sciences	21–39	1	1	1	0	3	3	**9**
Faculty of Biomedical Engineering								
Technical sciences	21–39	1	1	1	1	2	2	**8**
Faculty of Information Technology								
Natural sciences	11–18	1	0	1	0	1	1	**4**
University Institutes (studies outside faculties)								
Economics	62, 65	1	0	1	0	0	0	**2**
Czech Technical University								
Natural sciences	11–18	2	1	3	1	1	1	**9**
Technical sciences	21–39	10	8	19	7	14	14	**72**
Economics	62, 65	1	0	1	0	0	0	**2**
TOTAL		**13**	**9**	**23**	**8**	**15**	**15**	**83**

P = full-time study K/D = part-time study / distance study
In 2018, no master study programme was implemented at CTU.

Tab. 2.3

Joint/Double/Multiple Degree study programmes carried out with foreign universities	
Faculty of Civil Engineering	
Name of programme 1	**Civil Engineering, Advanced Master´s in Structural Analysis of Monuments and Historical Constructions**
Partner organizations	University of the Minho, Portugal Technical University of Catalonia, Spain University of Padova, Italy
Affiliated organizations	Institute of Theoretical and Applied Mechanics, CAS
Date of commencement of programme	2008
Category of programme (Joint/Double/Multiple Degree)	Multiple Degree
Duration of studies (semesters)	2
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, including admission of students and final exams	Credit system – 30 credits/semester, administration of the admission process is handled by the consortium secretariat at the University of the Minho. The final decision on admission of students is taken by the consortium‘s executive board, which comprises representatives of all participating institutions. Studies are concluded by final state examination at CTU and at the foreign university. For further details, see www.msc-sahc.org.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are always issued by 2 institutions (the university at which the student attended courses and the university at which they wrote and defended the master thesis).
How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.
Number of active studies as of 31 December	7
Name of programme 2	**Civil Engineering, Double Degree Master Program in Civil Engineering**
Partner organizations	École nationale des ponts et chaussées (ENPC), France
Affiliated organizations	None
Date of commencement of the programme	2006
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, including admission of students and final exams	Credit system – 30 credits/semester, admission process – joint admission process at CTU and ENPC, studies completed by defending the master thesis at ENPC + the final state examination at CTU.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.

How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.
Number of active studies as of 31 December	0
Name of programme 3	**Civil Engineering, Double Degree Master Program in Civil Engineering**
Partner organizations	Technische Universität München, Germany Fakultät für Bauingenieur- und Vermessungswesen, Germany
Affiliated organizations	none
Date of commencement of the programme	2009
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	3
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, including admission of students and final examinations	Credit system – 30 credits/semester, students selected by both universities, individual study plan, studies completed by a final state examination at both universities.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.
Number of active studies as of 31 December	0
Name of programme 4	**Civil Engineering, Double degree Master Program in Civil Engineering**
Partner organizations	École Centrale de Nantes, France
Affiliated organizations	none
Date of commencement of the programme	2010
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	3
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, including admission of students and final exams	Students selected by both universities, individual study plan, studies completed by presenting and defending a master thesis and by the final state examination.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.
Number of active studies as of 31 December	0

Name of programme 5	**Civil Engineering, Sustainable Constructions under Natural Hazard and Catastrophic Events**
Partner organizations	University of Coimbra (UC), Portugal Luleå University of Technology (LTU), Sweden Politehnica University of Timisoara (PUT), Romania University of Liège (ULg), Belgium University of Naples Federico II, Italy
Affiliated organizations	Universidade do Estado do Rio de Janeiro, Brazil Moscow State University of Civil Engineering, Russian Federation ArcelorMittal Global R&D, Luxembourg European Convention for Constructional Steelwork, Belgium Donbas National Academy of Civil Engineering and Architecture, Ukraine Tongji University, China Kyrgyz State University of Construction, Transport and Architecture, Kyrgyzstan Univerza v Ljubljani, Slovenia Associação Portuguesa de Construção Metálica e Mista, Portugal University of Mosul, Iraq
Date of commencement of the programme	1 September 2012
Category of programme (Joint/Double/Multiple Degree)	Multiple Degree
Duration of studies (semesters)	3
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, incl. admission of students and final exams	Field of study with the participation of foreign students supported by Erasmus Mundus programme 520121-1-2011-1-CZ-ERA MUNDUS-EMMC, administered at CTU within the SUSCOS consortium - Sustainable Constructions under Natural Hazards and Catastrophic Events. Applications accepted by 15 January, selection process by the consortium committee completed by 28 February. Studies take place at one partner university in the first semester and at another partner university in the second semester; master theses are spread evenly across all the partner universities. The universities take turns in organizing the first and second semesters, e.g. in the 2012-2014 edition, the first semester was held in Coimbra, the second in Prague. Master theses are defended in January of the final semester at the university where the students have been studying. The final workshop and the final state examination at CTU in Prague are held in February in the final semester. For the 2012-2014 edition, a contract on Multiple Degree was concluded, for the next edition, a contract on Joint Degree has been drawn.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.

Number of active studies as of 31 December	0
Name of programme 6	**Civil Engineering, Double Degree Master Programme in Civil Engineering**
Partner organizations	KTH Royal Institute of Technology, Stockholm, Sweden
Affiliated organizations	none
Date of commencement of the programme	2010
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, incl. admission of students and final exams	Students selected by both universities, individual study plan, studies completed by presenting and defending a master thesis and by a final state examination.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.
Number of active studies as of 31 December	1
Name of programme 7	**Civil Engineering, Double degree Master Program in Civil Engineering**
Partner organizations	RWTH Aachen, Aachen, Germany, Faculty of Civil Engineering
Affiliated organizations	none
Date of commencement of the programme	2016
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, incl. admission of students and final exams	Students selected by both universities, individual study plan, studies completed by presenting and defending a master thesis and by a final state examination.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	Student exchange is not organized. Students are accepted on the basis of a joint admission process.
Number of active studies as of 31 December	6

Faculty of Mechanical Engineering	
Name of programme 1	**Master of Automotive Engineering**
Partner organizations	Ensta Bretagne, Brest, France TU Chemnitz, Germany IT Bandung, Indonesia HAN Arnhem, Netherlands
Affiliated organizations	IFP, France
Date of commencement of program	2009
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of study (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, incl. admission of students and final exams	In the first academic year, students study in the Czech Republic. Later, they leave for the partner university that they nominated in their application form. The final state examination and the presentation and defence of the master thesis are taken at the university where the student studied the final semester.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	ERASMUS+
Number of active studies as of 31 December	102
Name of programme 2	**Mechanical Engineering, field of study Material and Production Engineering**
Partner organizations	IT Bandung
Affiliated organizations	
Date of commencement of program	2015
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of study (semesters)	5
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, incl. admission of students and final exams	In the first academic year, students study in the Czech Republic. Later, they leave for the partner university that they nominated in their application form. The final state examination and the presentation and defence of the master thesis are taken at the university where the student studied the final semester.
How are diplomas and diploma supplements issued?	Diplomas and diploma supplements are issued by each university.
How is student exchange organized?	ERASMUS+
Number of active studies as of 31 December	0

Faculty of Electrical Engineering	
Name of programme 1	**Erasmus Mundus Master Course – Joint European Master in Space Science and Technology (SpaceMaster)**
Partner organizations	Luleå University of Technology (LTU), Sweden Julius-Maximilian's University of Würzburg (JMUW), Germany Cranfield University (CU), United Kingdom Aalto University (Aalto), Finland Université Paul Sabatier Toulouse III (UPS), France University of Tokyo (Todai), Japan Utah State University (USU), the USA
Affiliated organizations	Swedish Institute of Space Physics (IRF), Sweden Swedish Space Corporation (SSC), Sweden European Incoherent Scatter Scientific Association (EISCAT), Norway Honeywell s.r.o. (Honeywell), Czech Republic European Aeronautics Defence and Space Company, Innovation Works Division (EADS), France
Date of commencement of the programme	Space-Master I – 2005–2009 Space-Master II – 2010–2014
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Master
Organization of studies, including admission of students and final examinations	Admission process: Students are assessed and put into a ranking order on the basis of established criteria. Depending on the available financial resources, some students are awarded study grants. The criteria for student assessment are as follows: results achieved in a bachelor study programme, professional experience, experience of study abroad. In addition, the university at which the student graduated from the bachelor study programme is taken into account. Universities which are included on the list compiled from the "Academic Ranking of World Universities" (ARWU – 2009), "THES-QS World University Rankings 2007", and the "Third European Report on S&T Indicators 2003" are considered excellent, and are given a coefficient of 1.2, while other universities are given a coefficient of 1. Organization of studies: the SpaceMaster master study programme takes 4 semesters of studies. A total of 120 ECTS credits must be earned. Students spend the first semester at JMUW, Germany, and the second semester at LTU, Sweden. In the second year of studies, each student can choose the university at which they will continue from among all partner universities. In the fourth semester, students work mainly on their master theses, usually at the university that they chose for the second year of the studies. However, some students may work on a master thesis in the fourth semester that was commissioned by one of the affiliated members. A further option is to work on a master thesis at USU or at Todai in the fourth semester. Students always have at least two supervisors,

	one from the university they have chosen for the second year of studies, and another from LTU, which Is the main coordinator of the programme. The studies are concluded by the presentation and defence of a master thesis. At CTU, it is also necessary to take the final state examination, which is taken together with the presentation and defence of the master thesis, with a LTU representative always on the commission as a reviewer of the master thesis.
How are diplomas and diploma supplements issued?	Each student who has complied with the requirements for the award of a diploma will receive a diploma from LTU, the main coordinator of the programme. They will receive a second diploma from the partner university at which they studied in the second year of the studies. Diplomas are awarded at a ceremony held in the autumn at one of the partner universities. At CTU, a diploma and a diploma supplement are issued both in Czech language and in English language.
How is student exchange organized?	About 200 students from around the world apply for the SpaceMaster programme each year. Following an admission procedure, about 80 are accepted and about 15 receive a study grant. The remaining students have to pay for their studies, including study fees, or are supported by various educational programmes of their home countries. The student exchange is detailed in the previous section.
Number of active studies as of 31 December	0
Name of programme 2	**Power Generation and Transportation**
Partner organizations	Tomsk Polytechnic University (TPU), Russian Federation
Affiliated organizations	none
Date of commencement of program	2011
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of study (semesters)	6
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of study, including admission of students and final examinations	The sending university is responsible for student admissions. The first year of studies for both Russian and Czech students takes place at TPU. The Russian students study the second year in the Czech Republic and the third year at TPU. The Czech students continue for two years at CTU. The Russian students will compile the part of their master thesis dealing with economics in the Czech Republic; the Czech students will compile the part of their master thesis dealing with technical matters in Russia. The thesis is specified in consultation between the two universities. The master thesis is presented and defended before a joint commission.

How are diplomas and diploma supplements issued?	Each student who has complied with the requirements for receiving a diploma will be awarded a diploma at their home university. They will be awarded a second diploma from the partner university at which they studied for one year. At CTU, a diploma and a diploma supplement are issued both in Czech language and in English language.
How is student exchange organized?	An admission process takes place at both universities. For the first cohort, the capacity was limited to 10 students from each university. The expected target number is 20 students from each university. A mutually balanced number of students is expected.
Number of active studies as of 31 December	10
Name of programme 3	**Double Degree programme with the National Taiwan University of Science and Technology**
Partner organizations	National Taiwan University of Science and Technology, DECE (Department of Electronic and Computer Engineering), Taiwan
Affiliated organizations	none
Date of commencement of the programme	2015
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	5
Type of programme (bachelor, follow-up master, master, doctoral)	Master
Organization of study, incl. admission of students and final exams	Studies are divided into five semesters, of which three will be spent at home university (CTU) and two at the partner university (NTUST). At the partner university, students will study subjects they have preselected and which will be recognized by their home university. The studies at the partner university, including presentation and defence of the master thesis are in English language. Joint master thesis is compiled at both universities in English language.
How are diplomas and diploma supplements issued?	Upon fulfilling the requirements, each student will receive a diploma from their home university. They will be awarded a second diploma at the partner university where they have studied for one year. Graduates are awarded the degree “Engineer” (abbreviated as “Ing.”) at CTU in Prague and the degree “Master of Science” at NTUST.
How is student exchange organized?	An admission process takes place at both universities. The capacity is limited to 5 students from each university. The expected target number of students is 10 from each university. A mutually balanced number of students is expected.
Number of active studies as of 31 December	1
Name of programme 4	**Double Degree with RWTH Aachen**
Partner organizations	RWTH Aachen, Germany
Affiliated organizations	none
Date of commencement of the programme	2015

Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	6
Type of programme (bachelor, follow-up master, master, doctoral)	Master
Organization of study, incl. admission of students and final exams	Students are accepted by both CTU and RWTH Aachen. Studies are divided into five semesters, of which three will be spent at home university (CTU) and two at the partner university (RWTH). At the partner university, students will study subjects they have preselected and which will be recognized by their home university. The studies at the partner university, including presentation and defence of the master thesis are in English language. Joint master thesis is compiled at both universities in English language.
How are diplomas and diploma supplements issued?	Upon fulfilling the requirements, each student will receive a diploma from their home university. They will be awarded a second diploma at the partner university where they have studied for one year. Diplomas and diploma supplements at CTU are issued both in Czech language and English language.
How is student exchange organized?	An admission process takes place at both universities. The capacity is limited to 5 students from each university. A mutually balanced number of students is expected.
Number of active studies as of 31 December	6
Name of programme 5	**Double Degree with Kazan Federal University**
Partner organizations	Kazan Federal University, Russia
Affiliated organizations	none
Date of commencement of the programme	2018
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of studies (semesters)	5
Type of programme (bachelor, follow-up master, master, doctoral)	Master
Organization of study, incl. admission of students and final exams	Students are accepted by both CTU and KFU. Studies are divided into five semesters, of which three will be spent at home university (CTU) and two at the partner university (KFU). At the partner university, students will study subjects they have preselected and which will be recognized by their home university. The studies at the partner university, including presentation and defence of the master thesis are in English language. Joint master thesis is compiled at both universities in English language.
How are diplomas and diploma supplements issued?	Upon fulfilling the requirements, each student will receive a diploma from their home university. They will be awarded a second diploma at the partner university where they have studied for one year. Diplomas and diploma supplements at CTU are issued both in Czech language and English language.
How is student exchange organized?	An admission process takes place at both universities. The capacity is limited to 8 students from each university. A mutually balanced number of students is expected.

Number of active studies as of 31 December	7
Faculty of Transportation Sciences	
Name of programme 1	**Technology in Transportation and Telecommunications**
Partner organizations	Linköpings universitet, Sweden UAS Fachhochschule Technikum Wien, Austria
Affiliated organizations	none
Date of commencement of the programme	2009-2010 academic year
Category of programme (Joint/Double/Multiple Degree)	Joint Degree
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of study, incl. admission of students and final exams	Students at the Faculty of Transportation Sciences can apply for admission to the IS-Intelligent Transportation Systems joint-degree programme. Applicants have to obtain the full 60 credits for all the courses in the first year in accordance with the recommended schedule of the IS-Intelligent Transportation Systems programme. Graduates of the study programme offered in collaboration with a foreign university are awarded the degree "Engineer" (abbreviated as "Ing." and placed before the name) under Section 46, Para 4 of the Act, together with an academic degree from the foreign university in accordance with the legislation of the country in which the partner university operates. The name of the foreign partner university is stated in the CTU university diploma in Czech language and in English language.
How are diplomas and diploma supplements issued?	Graduation ceremony
How is student exchange organized?	On the basis of an agreement between CTU in Prague, Faculty of Transportation Sciences, and the student.
Number of active studies as of 31 December	7
Name of programme 2	**Technology in Transportation and Telecommunications**
Partner organizations	The University of Texas at El Paso, the USA University of Žilina, Slovakia
Affiliated organizations	none
Date of commencement of program	2011-2012 academic year
Category of programme (Joint/Double/Multiple Degree)	Joint Degree
Duration of study (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master

Organization of study, incl. admission of students and final exams	In order to be admitted into a master study programme which is a continuation of a bachelor study programme, the student must complete their bachelor studies by passing the final state examination. An interview in English language on a specialized topic from the field of transportation and logistics forms part of the admission procedure for the Transportation and Logistics Systems (TR) study programme. All applicants must present an original of a valid TOEFL score report at the interview. Successful applicants are required to take the GRE Revised General Test in the first year of the follow-up master study programme at CTU in Prague, Faculty of Transportation Sciences, in order to be admitted to study in the USA, in accordance with the University of Texas at El Paso regulations, in the second year of the TR follow-up master study programme. At the end of the two-year follow-up master study programme, graduates will be awarded two degrees and two diplomas – MSc. (Master of Science in Civil Engineering, from UTEP) and Ing. (field of study Transportation and Logistics Systems, from FTS CTU).
How are diplomas and diploma supplements issued?	CTU diplomas and diploma supplements are issued only to students who have studied one full year at CTU (the first or second year) and who have passed the final examinations and presented and defended the master thesis. Grades from the other school are recognized and transferred to the CTU system.
How is student exchange organized?	Students spend each year at a different university. Student exchange programmes are not organized. For the future, study stays at a third university are planned for working on the master thesis. FTS has concluded a number of bilateral agreements for this purpose.
Number of active studies as of 31 December	The last active study was concluded as of 18 June 2018.
Faculty of Biomedical Engineering	
Name of programme 1	**CEMACUBE – Common European Master's Course in Biomedical Engineering (Erasmus Mundus)**
Partner organizations	RWTH Aachen, Germany Ghent University, Belgium Free University of Brussels (VUB), Belgium Trinity College Dublin, Ireland University Groningen, Netherlands (coordinator)
Affiliated organizations	ETH Zürich, Switzerland University of Calabria, Italy Aalborg University, Denmark Université de Technologie Compiègne, France University of Strathclyde, United Kingdom University of Patras, Greece Technical University of Warsaw, Poland
Date of commencement of program	September 2010
Category of programme (Joint/Double/Multiple Degree)	Double Degree
Duration of study (semesters)	4

Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of study, including admission of students and final exams	Graduates of all technical bachelor study programmes except informatics can be admitted. Students will spend one year at one university and the second year at another university. In addition, they can go to a third university for the final semester in order to write the master thesis. The first year (2 semesters) provides a general education in biomedical engineering, and the studies are the same at all partner universities. In the 3rd semester, each university offers several specializations that students can choose from. The fourth semester is fully dedicated to the preparation of the master thesis. The admission of students takes place in two groups: students from countries outside the EU, and students from countries in the EU. For each group, a certain number of European Commission study grants is available. Applications must be submitted to the program's secretariat in Groningen. There, the applications are formally checked and assessed on the basis of the written applications (the quality of the bachelor study programme, language skills). The best 60 applicants are then ranked according to the results achieved in their bachelor studies, taking their country's GDP into account. The best 36 among them are invited for a personal interview – always with two members of the Steering Committee (over Skype). Final examinations (final state examination) and the presentation and defence of the master thesis take place at the university where the student studied in the third semester. Representatives of the university where the student studied the first year, or other interested parties, may participate. The result is valid for all members of the consortium (the consortium has harmonization tables available), and is used as the basis for issuing both Double Degree diplomas. The two diplomas are awarded together. They are valid only when presented together.
How are diplomas and diploma supplements issued?	CTU diplomas and diploma supplements are issued only to students who have studied one full year at CTU (the first or second year) and who have passed the final examinations and presented and defended the master thesis. Grades from the other school are recognized and transferred to the CTU system.
How is student exchange organized?	Students spend each year at a different university. Student exchange programmes are not organized. For the future, study stays at a third university are planned for working on the master thesis. FBME has concluded a number of bilateral agreements for this purpose.
Number of active studies as of 31 December	3

Summary of information in Tab. 2.3	Bachelor study programmes	Master study programmes	Follow-up master study programmes	Doctoral study programmes
Faculty of Civil Engineering				
Number of study programmes	0	0	7	0
Number of students in study programmes	0	0	14	0
Faculty of Mechanical Engineering				
Number of study programmes	0	0	2	0
Number of students in study programmes	0	0	102	0
Faculty of Electrical Engineering				
Number of study programmes	0	4	1	0
Number of students in study programmes	0	14	10	0
Faculty of Transportation Sciences				
Number of study programmes	0	0	2	0
Number of students in study programmes	0	0	7	0
Faculty of Biomedical Engineering				
Number of study programmes	0	0	1	0
Number of students in study programmes	0	0	3	0

Tab. 2.4

Accredited study programmes organized jointly with another university or public research institution* based in CR	
Faculty of Mechanical Engineering	
Name of study programme	**Mechatronics**
KKOV group	**B3943**
Partner university/institution*	University of South Bohemia in České Budějovice
Date of commencement of program	2014
Duration of study (semesters)	8
Type of programme (bachelor, follow-up master, master, doctoral)	Bachelor
Organization of studies, including admission of students and final examinations	The admission of new students and administration of the whole programme is organized at the Faculty of Science, University of South Bohemia in České Budějovice. The lessons are organized by the University of South Bohemia in cooperation with FME CTU and Robert Bosch Č. Budějovice. The programme takes place at the University of South Bohemia. No final state exams have taken place so far.
Number of active studies as of 31 December	25

Faculty of Electrical Engineering	
Name of study programme	**Biomedical Engineering and Informatics**
KKOV group	**51–53**
Partner university	Charles University – First Faculty of Medicine
Date of commencement of program	2011
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, including admission of students and final examinations	Studies of biomedical engineering and informatics prepare experts for leading medical centres with cutting-edge medical and diagnostic technology. The graduates are qualified to work directly with patients. Admission is based on entrance examinations. Graduates are awarded the “Ing.” degree.
Number of active studies as of 31 December	20
Faculty of Architecture	
Name of study programme	**Landscape Architecture**
KKOV group	**21–39**
Partner university/institution*	Czech University of Life Sciences
Date of commencement of program	2015
Duration of studies (semesters)	6
Type of programme (bachelor, follow-up master, master, doctoral)	Bachelor
Organization of studies, including admission of students and final examinations	The study programme provides basic knowledge from the field of nature, technology, social science and culture which is a prerequisite for the work of a landscape architect. The focus is on the interconnection with related fields of study: urbanism, spatial planning, architecture, arts and ethics. At the same time, students are informed about natural processes which significantly affect creative work. Admission is based on entrance examinations; graduates are awarded the “Bc.” degree.
Number of active studies as of 31 December	1

Masaryk Institute of Advanced Studies	
Name of study programme	**Entrepreneurship and Commercial Engineering in Industry**
KKOV group	**62 (6208T128)**
Partner university/institution*	University of Economics – Faculty of Business Administration
Date of commencement of programme	2006
Duration of studies (semesters)	4
Type of programme (bachelor, follow-up master, master, doctoral)	Follow-up master
Organization of studies, including admission of students and final examinations	Form of studies: part-time Standard duration of studies: 2 years Awarded academic degree: Engineer (Ing.) No applications for admission to the Entrepreneurship and Commercial Engineering programme were accepted in 2018.
Number of active studies as of 31 December	1

Note: *They are, for example, accredited study programmes organized together with the Czech Academy of Sciences or with other public research institutions based in CR.

Summary of information in Tab. 2.4	Bachelor study programmes	Master study programmes	Follow-up master study programmes	Doctoral study programmes
Faculty of Mechanical Engineering				
Number of study programmes	1	0	0	0
Number of students in study programmes	25	0	0	0
Faculty of Electrical Engineering				
Number of study programmes	0	0	1	0
Number of students in study programmes	0	0	20	0
Faculty of Architecture				
Number of study programmes	1	0	0	0
Number of students in study programmes	1	0	0	0
Masaryk Institute of Advanced Studies				
Number of study programmes	0	0	1	0
Number of students in study programmes	0	0	1	0

Tab. 2.5

Accredited study programmes organized jointly with higher vocational schools

CTU did not organize any accredited study programmes with any higher vocational school.

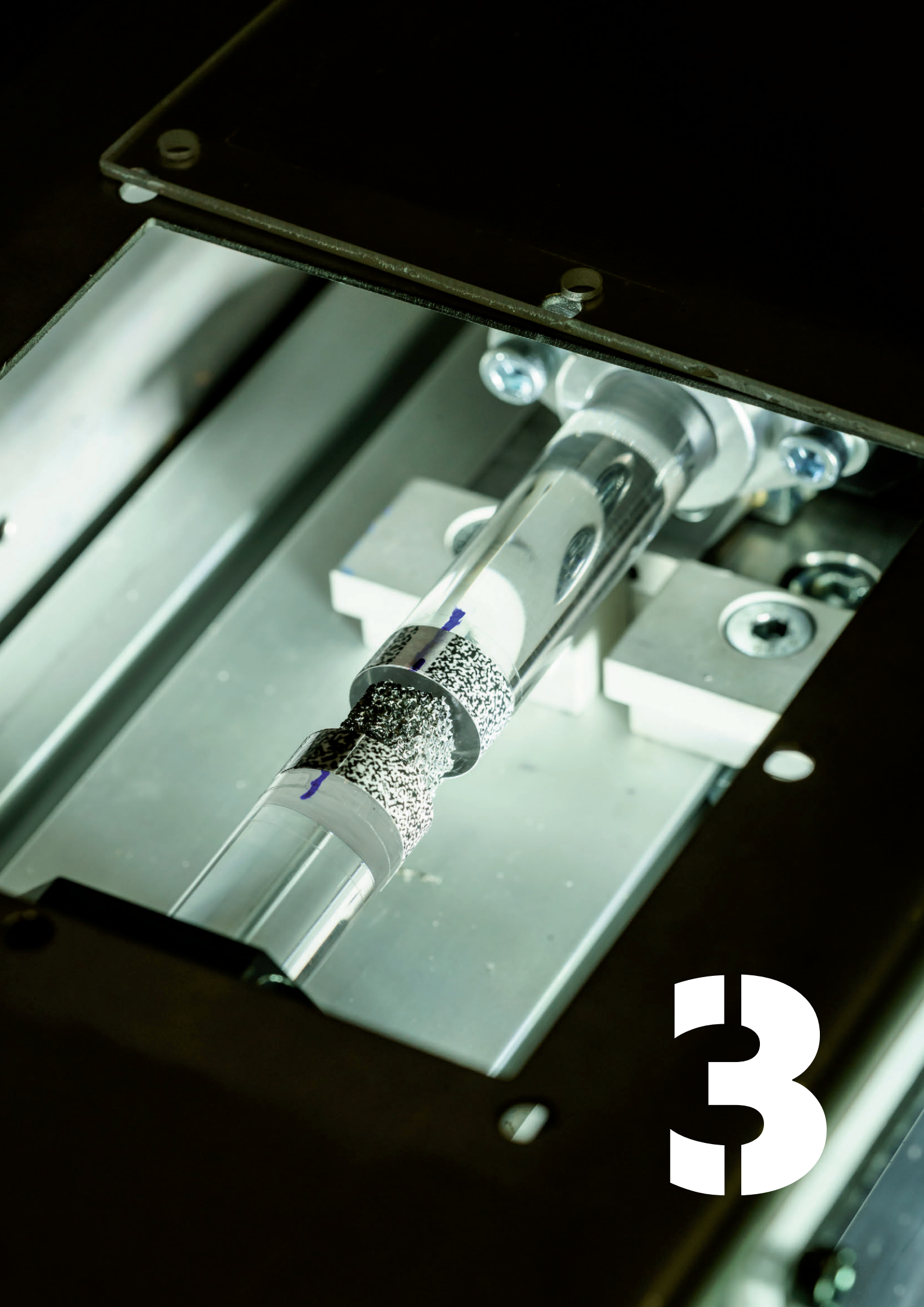
Tab. 2.6

Lifelong learning courses (LLL) at the university (number of courses)									
Groups of accredited study programmes	**KKOV**	**Courses for professional development**			**Free-time courses**			**U3V**	**TOTAL**
		up to 15 hrs	**from 16 to 100 hrs**	**over 100 hrs**	**up to 15 hrs**	**from 16 to 100 hrs**	**over 100 hrs**		
Natural sciences	11–18	1	53	1	8	4	0	21	**88**
Technical sciences	21–39	16	209	2	0	9	0	71	**307**
Social sciences and services	61, 67, 71–73	9	80	8	8	95	34	33	**267**
Economics	62, 65	0	2	0	2	1	0	2	**7**
Pedagogy, teacher training and social care	74, 75	0	42	6	0	0	0	0	**48**
Psychology	77	3	1	0	0	3	0	7	**14**
Culture and art	81, 82	0	1	0	2	4	0	12	**19**
TOTAL		**29**	**388**	**17**	**20**	**116**	**34**	**146**	**750**

Tab. 2.7

Lifelong learning courses (LLL) at the university (number of participants)										
Groups of accredited study programmes	**KKOV**	**Courses for professional development**			**Free-time courses**			**U3V**	**TOTAL**	**Of which Section 60, Higher Education Act**
		up to 15 hrs	**from 16 to 100 hrs**	**over 100 hrs**	**up to 15 hrs**	**from 16 to 100 hrs**	**over 100 hrs**			
Natural sciences	11–18	13	881	27	212	94	0	276	**1503**	789
Technical sciences	21–39	541	614	60	0	218	0	658	**2091**	487
Social sciences and services	61, 67, 71–73	50	808	89	68	1086	537	515	**3153**	268
Economics	62, 65	0	39	0	34	3	0	60	**136**	0
Pedagogy, teacher training and social care	74, 75	7	148	88	0	0	0	0	**243**	15
Psychology	77	36	5	0	10	35	0	64	**150**	0
Culture and art	81, 82	0	86	0	36	48	0	242	**412**	80
TOTAL*		**647**	**2581**	**264**	**360**	**1484**	**537**	**1815**	**7688**	**1639**

Note: *Since the table gives the number of physical persons that can participate in more than one course, the total number is not a sum of the previous rows or lines, but it gives the real total number of participants in the courses.


3

3. Students

3.1. Measures aimed at reducing the number of failing students

To a certain extent, academic failure is an inevitable part of university studies. The most important common measure taken by all constituent parts of CTU that should minimise excessive academic failure is an adequately demanding admission procedure. In addition, the individual constituent parts listed the following measures taken in 2018:

The Faculty of Civil Engineering organizes preparatory courses for the written admission examination in mathematics to bachelor study and preparatory courses in drawing which provide applicants with the possibility to prepare for the interview in architecture. Applicants for bachelor study programmes can also take a mock version of the written admission examination in mathematics, which takes place at an auditorium at the faculty or which can be taken via an application freely accessible on the Internet. The faculty also organizes a one-week intensive course in mathematics and geometry for construction as well as a levelling drawing course for newly-admitted students before the beginning of the studies with the aim to accommodate the variable level of knowledge of newly-admitted students due to the differing amounts of coursework in high schools. The faculty offers a choice of optional courses, including Remedial Mathematics, Remedial Geometry for Construction in the 1st semester of the studies, aimed at revising high school mathematics coursework, and individual consultations with teachers and study counsellors. Also remedial courses in mechanics and building chemistry are on offer now. Evaluation of the number of failing students is carried out on

a regular basis. The regular student questionnaire which takes place after the end of each semester is an important tool for getting feedback from students and for the evaluation of problem areas.

In 2018, **the Faculty of Mechanical Engineering** continued with its project "Reducing the Number of Failing Students". Together with FME, also CIIRC participated in this project by processing long-term statistics and evaluating data. At the same time, the faculty became an application partner of a project of the Centre for Higher Education Studies. Also this project aims to detect the risks of transitioning from high school to university across all types of higher education institutions. Apart from CTU in Prague (FME and FTS), the University of West Bohemia in Plzeň and Charles University also participate in the project.

Furthermore, a working group appointed by the faculty's dean has been working at the faculty, which gathers information provided by students and teachers alike and, last but not least, organizes observations in classes of "exposed" subjects.

Regular meetings with students had two main rounds:

1. At the beginning of the semester, a meeting with students in the first year of bachelor study programmes, the aim of which is to make smooth the transition to a new environment and acquaint new students with the differences between higher and secondary education.
2. At the end of the first semester, a meeting with students in the first year of bachelor studies, the aim of which is to acquaint them with the system of university examinations, the selection of examination dates and, above all, the strategy of how to deal with the fulfilment of study obligations. During the examination period, selective meetings with students who were potentially "at risk" took place in order to modify their plans for the rest of the examination period so that they were able to comply with the Study and Examination Rules for students at CTU and proceed to the summer semester. The aim of all these steps is to reduce the rate of resits, or academic failure. In previous years, the number of failing students was reduced using intensive resources, but in 2018 these resources were already depleted and the number of failing students was maintained at the 2017 level using extensive resources. In case of students in the last year of bachelor studies, the number of students who had to extend their bachelor studies, thus postponing their entry into follow-up master studies, was reduced thanks to supporting measures.

Faculty of Electrical Engineering

A number of measures are taken in order to reduce the number of failing students in bachelor study programmes:

- Preparatory courses in mathematics and physics before the entrance examinations,
- A one-week summer welcome course for students before the start of the semester,
- Remedial courses in mathematics during the 1st semester, so-called Safe Mathematics, designed primarily for students graduating from schools other than grammar schools,

- Optimization of entrance tests,
- Measures taken by heads of departments and the dean following suggestions made by students in anonymous student questionnaires,
- Evaluation of marks and pass rates for courses offered in the 1st year, leading to measures to improve the educational process,
- Consultations for students, establishment of a so-called Information Centre at the Study Department.

The Faculty of Nuclear Sciences and Physical Engineering organizes a number of events during which study applicants have the opportunity to get to know the faculty. They can also attend a free preparatory course in mathematics and physics.

Students in lower years of studies can attend consultations with tutors from among older colleagues. The faculty also organizes a preparatory week at the beginning of the 1st year, where students get extensive information about the studies, the system of assessment, their rights and obligations. They will also take a basic course in mathematics.

Throughout their studies, students are encouraged by the faculty to evaluate individual teachers, which has implications for the pedagogical activity of individual employees.

Students can use tutors and attend consultations. At the same time, all fields of study now offer a seminar in the final year of studies with the aim to assist students in the writing of their bachelor or master theses.

By means of the "Dean's Award – Nuvia", the faculty, in cooperation with company Nuvia, supports the best student theses.

The Faculty of Architecture has a low percentage of unsuccessful students in bachelor and master study programmes.

Despite the low number of unsuccessful students, the faculty organizes additional courses of drawing for students who are preparing to resite their examination, or who have failed to enrol for the course, and remedial courses in mathematics. The faculty management monitors and analyses the number of successfully completed studies.

The Faculty of Transportation Sciences - in 2018, experts at the Institute of Applied Mathematics, the Faculty of Transportation Sciences CTU, organized a course of high school mathematics and physics for applicants to study at CTU. Participants in the courses had the opportunity to revise the basics of high school mathematics and physics and prepare for the state school leaving examinations. Emphasis was placed especially on the areas that are developed during the 1st year of studies.

In September 2018, the faculty's detached department in Děčín also organized a course of high school mathematics and physics, which is usually designed as a one-week educational event for new students before the start of the winter semester. Students enrolled in the 1st year will thus be able to revise the basics of high school mathematics and physics, meet the teachers of these subjects at university and get acquainted with and prepare for the methods of instruction at university. This should make the transition

from high school to university more manageable for all students, including students in part-time study programmes.

The Faculty of Biomedical Engineering took a number of measures in 2018 in order to reduce the number of unsuccessful students. Already during enrolment in the 1st year of studies, students were informed about their duties in accordance with the rules of study. Before the beginning of the academic year, the faculty offered a one-week course, under the title "BIOŠROT", which offered an entertaining introduction to selected topics (primarily biology, physics, mathematics and chemistry). A preparatory educational and orientation course called "FyzioTmel" was prepared for students in the 1st year of the field of study Physiotherapy. The aim of the course was to acquaint students with the instruction of anatomy and Latin and to improve their physical condition in a fun way. As part of the two courses students had a possibility to get acquainted with the faculty and its operation and study affairs. In addition, preparatory courses were organized for applicants to study in bachelor programmes and follow-up master programmes. Preparatory courses in biology, physics and chemistry were offered to high school students and preparatory courses in biology and physics were offered to university students.

The Faculty of Information Technology selects new students on the basis of entrance examinations that check the level of knowledge and skills of the applicants. A successful completion of the SCIO national comparative exam was also taken into account in the selection process, as well as participation in the student Olympics in mathematics, physics and programming.

The faculty organizes preparatory courses, including, for instance, a preparatory course in mathematics, which enables study applicants and prospective students to complete their knowledge in important areas that are crucial for their studies, thereby reducing the number of failing students, especially after the first semester. In addition, for the first time in 2018, the faculty organized a summer course called "Introduction to Computer Science", along with professors from Stanford University, which further enabled applicants/students to acquire the knowledge necessary for a successful study at the faculty.

Regularly implemented Teacher Assessment Questionnaires are an important source of feedback for teachers.

The study load for freshmen students at FIT is evenly spread across the whole semester.

The Masaryk Institute of Advanced Studies regularly adopts various measures to reduce the number of unsuccessful students. Already during their enrolment in the first year, students are informed about their duties in accordance with the rules of study. A very successful Adaptation Day is organized every year, which is part of the activities of the academic year and is firmly anchored in the time plan of the bachelor and master study programmes http://www.muvs.cvut.cz/uredni-deska/casovy-plan-akademickeho-roku/.

Prior to the beginning of the academic year, MIAS offers preparatory courses with the aim to prepare applicants for the admission examination. In case of the bachelor study

programme Economics and Management, applicants can attend preparatory courses in mathematics and English.

In 2018, the following measures were taken:

1. Special courses were offered to accommodate the variable level of knowledge in mathematics in order to reduce the number of unsuccessful students in selected subjects (Statistics, Corporate Finance, etc.).
2. Selected profile subjects were supplemented by lectures by outside experts on certain topics.
3. All teachers are available for consultations during office hours (at the appointed time or upon agreement outside office hours).
4. Electronic courses are available via LMS Moodle, which includes a wide range of support study materials (texts, worksheets, didactic tests, discussions, methodological guides, video tutorials, etc.) depending on the nature of the subject.

The number of unsuccessful students in the study programme is monitored throughout the whole studies in individual years, semesters and subjects. The KOS study information system is used for the evaluation, which enables automatic evaluation of students' success in individual subjects. Within these statistics, primarily the indicators that show the percentage of successful completion of a subject - examination, the percentage of successful completion of a subject - credit are evaluated.

Statistical overviews are used by guarantors of programmes and by the co-ordinator of study affairs to evaluate the rate of unsuccessful studies. They are then used to decide about the introduction of measures, for example, in the form of introducing optional subjects that contribute to reducing the number of unsuccessful students or modifying the forms of instruction.

3.2. Measures aimed at reducing extension of the study period

All CTU faculties strive to prevent excessive extending of the study period. In 2018, they took the following measures:

At **the Faculty of Civil Engineering**, measures leading to the reduction of the extension of the study period are in the form of better sharing of information with students concerning disadvantages arising from extending the study period. The faculty offers its students individual consultations on how to proceed in their studies in order to avoid unnecessary extension of the study period – i.e. individual consultations concerning the study plan for individual semesters, etc. Students are informed about important dates related to their studies in a timely manner through the faculty website and in information meetings with their study counsellors. Most key subjects are offered both in the summer and winter semesters so students can enrol in subjects they have failed immediately in the next semester. Throughout the whole semester, teachers in their lectures inform about topics tested at the examination; the majority of core subjects

publish examination topics or sample tests. Every teacher is obliged to offer consultations during office hours. The dates of examinations and the capacity of each date are such that students are able to resite a failed examination within the given examination period.

Measures taken by **the Faculty of Mechanical Engineering** described above in chapter 3.1 led to a gradual synergic effect, and more students proceeded to the last year of studies. However, some students had not fulfilled all their study obligations in previous years. This led to an increased pressure on performance in the last year, which was something that many students had not been able to cope with in previous years and consequently they extended their period of studies. Also in this case the working group organized a meeting with students in the last year of bachelor study programmes.

Also these meetings with students had two main rounds:

1. At the beginning of the semester, a meeting with students in the last year of bachelor study programmes took place. The aim of this meeting was for the students to get fully acquainted with the schedule and obligations arising from the approaching end of bachelor studies. Also a so-called "Branch Day", an event organized by the faculty every end of November, is devised to help students better manage the last year of their studies. During this day, students are informed about the topics of bachelor theses and the requirements for further study in the branch they have selected in the follow-up master or doctoral programme.
2. At the beginning of the summer semester, a number of local meetings with students in the last year of bachelor study programmes took place. These meetings focused on students' obligations in the last semester of their studies, the preparation of the bachelor thesis and the preparation for the state final examination.

The aim of all these meetings is the reduction in the number of students who have to extend their studies by at least one semester. In 2018, the system of support activities led to a reduction in the number of students who had to extend their studies in bachelor study programmes and thus postpone their entry into a follow-up master study programme by 15%.

Faculty of Electrical Engineering

The activities to reduce extension of the study period are as follows:

- Evaluation of marks awarded to students and the successful completion of subjects in the 1st year and taking measures to improve the pedagogical process,
- Measures taken by heads of departments and the dean on the basis of suggestions made by students in the anonymous student questionnaire,
- Counselling for students, establishment of the so-called Information Centre of the Study Department.

The Faculty of Nuclear Sciences and Physical Engineering organizes an introductory course at the beginning of the winter semester of the 1st year that should expand the knowledge of the newly enrolled students in mathematics, physics, chemistry and

computer science and increase their motivation not to extend the study period. In addition, the faculty uses a system of volunteer tutors – i.e. students from higher years of study - who help younger students to grasp the studied subject matter.

From the very beginning of the studies we try to create a welcoming atmosphere and help establish connections between new students and their older colleagues and teachers.

Faculty of Architecture

The faculty offers remedial courses as part of LLL, which provide students with a possibility to acquire the knowledge necessary to pass compulsory subjects. Some subjects are offered in both summer and winter semesters in order to allow students to enrol in a course they have failed without a lapse.

Faculty of Transportation Sciences - In order to reduce the extension of the study period and in accordance with the CTU Statute, the faculty uses study related fees for extending the standard study period extended by one year. In the period from 1 January 2018 to 31 December 2018, a total of 169 decisions were issued at FTS which stipulated the obligation for students to pay a study related fee for exceeding the standard study period extended by one year. A total of 90 students appealed against the decision.

FTS employed no otther measures.

At **the Faculty of Biomedical Engineering**, the following measures were employed based on the results of an analysis of individual subjects in the framework of fields of study:

- For selected core subjects, the maximum capacity of practical classes was reduced so that teachers could individually engage with students and involve them more in independent creative activities. For the same reason, selected practical classes, as part of the core laboratory tasks, were taught by two teachers.
- Typical examination tasks were studied in lectures and practical classes; for some subjects typical examination tasks, including entries from previous years, were available directly on the website of the given subject.
- Optional courses were offered with the aim to reduce the number of unsuccessful students in selected subjects (Theoretical Electrical Engineering – practical classes, Introduction to Biomedical Engineering, Seminar in Chemistry, Seminar in Physics, Seminar in Mathematics, Seminar in Biomechanics, Seminar in Physical Chemistry and Biochemistry and others). Thanks to optional subjects, students could level or expand their knowledge or skills in the given discipline.
- Selected profile subjects were supplemented by lectures by outside experts on certain topics.
- Updated presentations, updated presentations, study materials and support study materials were available on the websites of individual subjects.
- In 2018, an event called "Citation Thursday" was held at the faculty aimed at students in the last year – it offered consultations on citing, citations, citation managers and copyright.

- Selected laboratories for practical classes were innovated and fitted with new equipment.
- The library stocks were increased to keep study materials up to date.

At **the Faculty of Information Technology**, some subjects are offered in both summer and winter semesters so that students who fail the courses the first time can enrol in them again in the semester that immediately follows instead of extending their studies by a full year.

Students at **the Masaryk Institute of Advanced Studies** are informed about their rights and obligations already during the enrolment, as set forth in the Act on Higher Education Institutions and the CTU Study and Examination Rules. Students proceed according to a recommended study schedule, or according to an individual study plan.

3.3. CTU's own scholarship programmes

Constituent parts of CTU support exceptionally talented or otherwise outstanding students by means of own scholarship programmes, support them when they decide to go on a study stay abroad or when they find themselves in a complicated social situation. In 2018, this included in particular:

Each year at the occasion of the November 17th anniversary, **the Faculty of Civil Engineering** awards the Dean's Scholarship. The faculty also awards one-time scholarships to students who study abroad within their study programme and to students who score in students' scientific work competitions. Students are given special-purpose scholarships for help in the organization of various events at the faculty connected with the development and promotion of the university. The best students' studio projects are awarded by so-called Yellow Cards that are accompanied by a special scholarship. Excellent bachelor and master theses are commended by the dean for the excellent compilation and defence based on the decision of the committee for the defence of theses. The best master theses are selected in 10 different categories according to the fields of study based on nominations of the committee. The awards are named after three prominent professors who worked at the faculty and significantly contributed to the development of their respective fields – prof. Bechyně (category Building Design, Technical Facilities in Buildings, Theory of Structures and Material Engineering, Engineering Structures and Bridges, Transportation Infrastructure and Geotechnics, Water Management and Environmental Engineering, Building Management, Technology of Constructions), prof. Voděra (category Architecture and Civil Engineering) and prof. Kořistka (category Geodesy and Cartography). Each award is accompanied by an extraordinary scholarship of five thousand crowns. For the first time this year, the faculty implemented motivation scholarships for applicants from high schools who will start studying in the faculty's bachelor study programmes in 2019-2020 and who achieved excellent study results in mathematics during their studies at high school or during the admission procedure.

In 2018, **the Faculty of Mechanical Engineering** granted scholarships in the same amount as in previous years to students for excellent study results (merit scholarships) in accordance with the CTU Rules for Granting Scholarships. The highest awarded amount was CZK 5,000 per month. In addition, in accordance with the CTU Rules for Granting Scholarships, the faculty awarded "special-purpose scholarships", mainly intended as motivation for the best freshmen students, as well as awards for excellent representation of the faculty and the university. This included in particular representation in sport activities (events by ÚTVS and good results achieved by our students in academic championships and international races and primarily a support provided to the CTU CarTech team), representation of the faculty and university at major events (IEF Brno, Gaudeamus Brno/Prague, University Fair, etc.). The faculty also participated in co-financing of specialized excursions (visit to the Automatica fair and the site of the Chernobyl NPP). A major part of the faculty's scholarship programme is scholarships to outgoing and incoming students under various exchange programmes.

The Faculty of Electrical Engineering implements own "Mobility-Action 2000" programme of scholarships in support of practical training for students abroad. In line with long-term efforts to raise quality, the faculty supported students' study trips abroad lasting longer than 29 days by offering special-purpose scholarships worth CZK 10,000/month (in Europe) and CZK 12,000/month (outside Europe).

The scholarships are primarily intended for stays that are not supported by another type of scholarship or support on the part of FEE or CTU. The maximum number of scholarships granted per year is 2,000.

The Faculty of Nuclear Sciences and Physical Engineering awards scholarships to students with excellent study results in accordance with the Rules for Granting Scholarships. In addition, the faculty also grants the "Dean's Award – Nuvia" to excellent students in cooperation with company Nuvia. This award is intended for the best students' theses at the faculty. The faculty also supports successful high school students – participants in Olympics in mathematics, physics and chemistry.

The Faculty of Architecture has no special scholarship programmes.

In 2018, the Faculty of Transportation Sciences awarded scholarships to all students as part of the final state examination, whose bachelor and master projects were listed for the Dean's Awards for outstanding work. Scholarships are also awarded to students who receive outstanding marks during their studies ("pass with distinction").

The Award of prof. Ing. Jaroslav Vlček, DrSc. is granted by the Faculty of Transportation Sciences to students in follow-up master study programmes for outstanding theses. The award consists of a diploma and a financial reward in the form of a scholarship in three different categories.

In 2018, **the Faculty of Transportation Sciences** organized the 16th edition of the conference Presentation of Projects for 2nd year students in bachelor study programmes who will apply for participation in a project. A committee of experts and students of the Faculty of Transportation Sciences selected ten best projects. Authors of

project presentations from among students received a financial reward in the form of a special-purpose scholarship.

At **the Faculty of Biomedical Engineering**, selected students received the Dean's Awards for outstanding bachelor and master projects and for outstanding marks throughout their studies. A total of 21 students received scholarships totalling CZK 116,000 in 2018. In addition, scholarships were granted to students who represented CTU or the Czech Republic in various sport disciplines and in competitions of medical rescuer teams. Talented students also received scholarships for outstanding study results. In total, 149 students were awarded scholarships totalling CZK 1,800,000 in 2018.

The dean of **the Faculty of Information Technology** announced a Dean's Award for outstanding bachelor and master projects. This award was made to selected students who presented and defended their bachelor or master theses within the standard study period, receiving an excellent grade, and who passed the final state examination during the standard study period with a grade of "very good" or better.

In 2018, **the Masaryk Institute of Advanced Studies** awarded students within the framework of the IP project "Support to Talented Students". MIAS awards scholarships to students with excellent study results as well as special-purpose scholarships. Scholarships for students with excellent study results are guided by the MIAS Director's Decree No. 5/2014.

A programme to support student activities is implemented with the aim to award the best bachelor and master theses, taking into account also active participation in expert forums connected with the presentation and popularization of the institute; publication activities are supported, including popularizing articles in specialized periodicals.

Students receive special-purpose scholarship in support of stays abroad in demanding foreign destinations that are at least 6,000 km away from the Czech Republic.

3.4. Consultancy services provided at CTU

The activities of the CTU Information and Consultation Centre (CIPS) are aimed at supporting students at CTU to succeed in their studies and also in their professional and personal lives. It focuses on first year students, beginning with their enrolment, during which assistance is offered to anyone who faces difficulties on entering the university. Information is made available to everybody about the support and assistance provided by the centre for dealing with problems linked with studies and with adapting to the new social and study environment.

The centre offers individual study, psychological, social, legal and spiritual consultations to CTU students, with special emphasis on dealing with difficult situations.

In the course of the academic year, the centre also organizes events aimed at helping students to acquire the necessary competences for their studies, and for their professional and personal lives. Seminars are held during the semester and during the examination period focusing directly on acquiring correct study habits (Efficient Study

Skills, How to Succeed in Examinations, How to Manage the Examination Period, How to Deal with Performance Anxiety, individual speech training, etc.).

Other forms of counselling are offered to students as part of an institutional project: couching, work in groups, seminars for doctoral students. Personal development seminars are organized for employees of the study departments. All centre's activities are aimed at creating an environment for students at CTU which reduces the barriers they are confronted with during their studies and which reduces the number of students who drop out prematurely and unnecessarily. A project called "Ta Technika" was implemented and supported by a FCA grant; the project focuses on the position of female students at CTU.

The main focus of CIPS is on working with students who have problems with procrastination and with addiction to computers. The centre cooperates intensively with ELSA, the Guidance and Support Centre for Students with Special Needs, and with study departments at individual faculties and institutes.

The Career Centre of the Czech Technical University (KC) provides support to students and graduates within three years of their graduation in the area of personal development so that their entry into the labour market is natural and smooth. KC serves as a connecting bridge between undergraduates who have the opportunity to get acquainted with practice on the one hand and companies that respect their study obligations on the other. KC offers the following services:

- Seminars and workshops for personal development, soft skills trainings and preparation for entering the labour market (9 times)
- A complex course "Your Business" – 8 lessons that guide students from the idea stage to setting up their own business
- Personality tests 8 times 4 lessons
- Career counselling 8 times 4 lessons
- Employment counselling
- Coaching
- Mentoring
- Library
- Online inspiration on Facebook and web pages
- Publication of vacancies, internship positions and events not organized by the Career Centre
- Participation in student events, orientation courses, fairs

3.5. Assistance for students with special needs

In 2018, assistance was provided by ELSA, the Guidance and Support Centre for Students with Special Needs (Department of Studies and Student Affairs, CTU Rector's Office) for students at CTU with physical, visual and hearing impairments, students with special learning disabilities including ADHD (Attention Deficit Hyperactivity Disorder), with autistic spectrum disorders and students with other impairments (students with chronic

diseases, psychological diseases or disorders, impaired speech or other communication abilities).

Services at the centre beyond the standard provision of specialized consultations were provided in accordance with a document issued by the Ministry of Education, Youth and Sports, which specifies general conditions for organizing the studies of students with special needs and includes methodological guidelines for fulfilling the requirements. This document was supplemented by the Methodological Guidelines on Support for Students with Special Needs at CTU.

Modifications of conditions for studies were implemented in close cooperation with faculties and institutes at CTU, primarily through direct work of teachers, contact persons and employees of the study departments.

In 2018, a total of 86 students registered at CTU made use of the study support services in one of the following areas:

- Digitization and library services,
- Visualization and transcription services,
- Assistance services,
- Technical services,
- Diagnostic services,
- Modification of the regime of classes and examinations (individual classes, time compensation).

The services provided by the ELSA Centre included organizing entrance examinations for study applicants with special needs in all faculties and institutes at CTU.

Students with special needs are identified already before the admission procedure. Applicants can declare their specific needs in the electronic application form. After that they take modified entrance examinations and are accepted by the university and enrol for the study, they are registered as students with special needs and can make use of service measures aiming at modified study conditions. In case student's specific needs arise during the studies, they can apply for the same level of support as is provided to students who took modified entrance examinations.

3.6. Support for exceptionally talented students, cooperation with high schools

At **the Faculty of Civil Engineering**, exceptionally talented students were from the first year of their studies put in a special selective study class group on the basis of their outstanding marks at high school. The support given to these students consisted in offering them some special optional courses, i.e. courses that require better knowledge - e.g. Mathematics, Elasticity and Rigidity. Exceptionally talented students are also offered an opportunity to join research teams as student scientific staff or as part of Student Grant Competition and Student Scientific Work. The faculty awards extraordinary students' projects with different types of scholarships. Talented students

are also encouraged to take part in various student competitions at home and abroad. The best students are sent to study abroad, receive scholarships for students with excellent study results and enjoy preferential treatment (for instance, they can make their timetables in advance.) The faculty supported the high school project "Mathematics +" - it took into account the advanced level of the school leaving examinations taken by students during the admission procedure for bachelor study programmes. The faculty organizes excursions for high school students during which students receive detailed information about the different fields of study offered at the faculty. In addition, visits to high schools and debates with high school students take place. The faculty also implements a successful project under which high school students are offered internships at the faculty and have the possibility to live the life of a university student for one week. High school students are invited to join a photography competition titled "With Your Own Eyes" and a competition for high school students "Hall of the Year Junior"

For a number of years now, **the Faculty of Mechanical Engineering** has an effective system implemented, under which the best students (ca 5%) receive scholarships for outstanding study results, the maximum amount of which is CZK 5,000 per month. The best ten students in the first year received a motivation special-purpose scholarship in the amount of CZK 10,000. At the same time, the best students are supported in the framework of their individual projects implemented across the faculty departments. In cooperation with the CTU Rector's Office, the faculty takes part in the search for excellent students who, apart from achieving outstanding study results, are active outside the university (participation in student creative activity, activities in their neighbourhood, activities in student organizations, etc.). In cooperation with the leadership of the Faculty of Mechanical Engineering, a project in support of the Engineering Student Club in implemented.

The Faculty of Electrical Engineering cooperates closely with selected schools with which it has concluded agreements on cooperation; these schools have been recognized as "Faculty Schools". In the framework of this cooperation, the faculty offered outstanding students an opportunity to cooperate with experts and to perform measurements in the FEE laboratories for their end of year projects and for their school leaving examinations projects. Outstanding high school students were awarded one-time motivation scholarships; the Open Informatics project provides scholarships for talented students. The faculty organized a competition for high school students with a new iPad mini as the main prize. Other events included the Robosoutěž competition, the Physics Laboratory for High School Students and the Spring School for Young Writers. Within the framework of the cooperation with high schools, high school students were invited to directly participate in classes at the faculty. The faculty starts working with talented students the moment they are accepted to the faculty and also during their studies. Talented students are incorporated into scientific research teams at the individual departments, where they work under the supervision of leading experts in the given field. In this way, students can participate in research in the framework of scientific grants and projects. Further activities include:

- Open Informatics, a selective programme,
- AVAST scholarship for three best students, OI scholarship for talented girls, http://oi.fel.cvut.cz/pro-studenty/stipendia, http://oi.fel.cvut.cz/rozhovory-se-studenty,
- Summer jobs for students before they start their bachelor studies,
- In subject A4B99RPH (1st semester), students with the best study results have a possibility to present their solutions in the framework of a standard lecture,
- Outstanding students are offered cooperation in research projects already during the 1st semester,
- A selective programme in Open Electronic Systems was created specifically for gifted students and is theory-oriented,
- A group of selected students is formed from those interested in programming based on their programming skills. The group attends additional classes with a special tutor. The results of these students are regularly evaluated,
- Electrical Engineering; Power Engineering and Management; the CEPS, a. s., Summer School, organized by CEPS, a. s.; Interdisciplinary Bilateral Winter and Summer Schools on Energy Systems in the Czech Republic and Austria, organized in cooperation with TU Wien and Jan Evangelista Purkyně University (UJEP),
- A master and doctoral thesis competition, organized by ČEZ, a.s.

Individual departments of **the Faculty of Nuclear Sciences and Physical Engineering** collaborate with a number of leading universities and scientific institutes in Europe and around the world, including with CERN laboratories on software systems for the COMPASS physical experiment, the Brookhaven National Laboratory and JET. These contacts enable students to become part of young dynamic teams with exceptional career prospects also outside of the academic sphere. For scientific and educational purposes, FNSPE operates its own fusion reactor (Tokamak) Golem. The faculty also comprises the Centre of Applied Physics and Advanced Detection Systems, the Doppler Institute for Mathematical Physics and Applied Mathematics, Czech-American Research Centre for Particle Physics BNL-CZ and the Centre for Research of Ultra-relativistic nuclear collisions, as well as a fractographic department that acts as the authorized testing laboratory for the Czech aviation industry and research. The faculty collaborates with many foreign institutions including, for example, the Defence Academy, the University of Manchester, the University of Tennessee, Slovak University of Technology, TU Wien, Budapest University of Technology and Economics, RWTH Aachen University, KTH Royal Institute of Technology in Stockholm, the International Atomic Energy Agency, etc. FNSPE is also a member of the Eastern European Research Reactor Initiative (EERRI) and CENEN (Czech Nuclear Education Network).

Throughout the year, the faculty supported or co-organized a number of high school competitions and projects, either as mentors, assessors or direct organizers. FNSPE also awards the above mentioned Dean's Award - Nuvia.

The Faculty of Architecture cooperates with leading international architectural studios and each year it sends one student for a 6-month internship in a prestigious architectural studio in Europe. The faculty also supports the development of exceptionally talented students by awarding scholarships for specific activities. In line

with the government programme "Architecture and Building Culture Policy", the faculty provides information to primary and high school students on architecture and studies of architecture in the form of educational workshops.

The 10th annual Dean's Awards at **the Faculty of Transportation Sciences** were presented in 2018. The competition for these awards is organized for student teams with two to four members and for individuals from secondary technical schools and grammar schools who submit projects on topics dealing with transportation and telecommunications. An expert committee consisting of representatives of the individual institutes of the Faculty of Transportation Sciences chose three best projects. All members of the winning teams received prizes. Students had an opportunity to consult their projects with experts during the competition and also after the results were announced. Participants in the competition who submitted an application to study at the faculty in the 2018–2019 academic year were not required to take the entrance examinations.

In 2018, **the Faculty of Biomedical Engineering** organized several events aimed at drawing attention to the results of its research and development activities. This involved not only work done by the faculty's scientific teams but also work done in technical, medical and safety fields. Exceptionally talented students at the faculty were actively involved in these events and were able to participate in solutions of tasks within the framework of the Student Grant Competition and scientific research tasks solved by individual departments and research teams.

High schools from the region were preferentially invited to attend these events. The events included the Open Doors Days, where high schools from Kladno and Central Bohemia were invited. Specialized Open Doors Days were also organized for individual high schools, such as High School of Electrical Engineering in Prague 10. High school students were able to learn more about the fields of study accredited at the faculty and visit specialized laboratories used in lessons and for scientific research activities at the faculty. High schools based in Kladno and Central Bohemia were also invited to attend similar culture events and events aimed at promoting science and technology (Majáles, Week of Science and Technology, etc.).

The Faculty of Information Technology cooperates with high schools on a personal as well as correspondence level with the aim to inform students about the possibilities to study at the faculty and about its activities. Within the framework of university activities, the faculty participated in several events for those interested in studying at CTU, such as the Gaudeamus Fairs in Prague and Brno and the Academia Fair in Bratislava. At the same time, the faculty also organized own event for those interested in studying at the faculty - Open Doors Days on 25 January 2018 and on 1 December 2018. In 2018, students at FIT and employees of FIT's PR department visited over 25 high schools, both in the Czech Republic and in Slovakia; during these visits they provided high school students with detailed information about the faculty. On 9-20 July 2018, the faculty organized the first year of a unique two-week coding course "Introduction to Computer Science". The aim of the course was to arouse interest in coding in 100 high school students by teaching them the basics of coding in a fun way. The course took place at the faculty under the guidance of professors and students from Stanford University and

FIT. The course was conducted in English. In addition, the Summer IT School - Czechitas took place at the faculty from 20 to 24 August 2018. The event was aimed at girls aged 14-19 and provided them with an opportunity to get acquainted with the basics of IT technology and to visit the faculty's laboratories. In 2018, high school students could participate in the 5th edition of the FIT Informatics Correspondence Seminar (FIKS). The seminar gave them an opportunity to prepare for studies at the faculty. The best participants could take part in a workshop that took place from 16 to 22 April 2018 and students who succeeded in the competition were accepted to the faculty without the need to take the entrance examinations.

The departments at **the Masaryk Institute of Advanced Studies** worked with talented students through individual study plans. Cooperation with high schools was carried out mainly within the Specialization in Pedagogy study programme. In their projects, students worked on ways to increase the attractiveness, competitiveness and also the material and technical resources of technical high schools. The institute's cooperation with high schools also included practical training of students in the Specialization in Pedagogy study programme. The institute also invites students and education specialists to attend the Open Doors Days, and provides information for high schools about its study programmes and about the admission procedure. The cooperation with high schools also includes project cooperation. High schools use partnership with MIAS also in order to hire successful graduates as teachers. Outstanding students have opportunities to study abroad on scholarships and also to participate actively in selected projects during their studies. Aside from that, the Masaryk Institute of Advanced Studies also cooperates with other partners, professional associations and educational organizations. They cooperate in searching for opportunities to involve outstanding students and to introduce them to professional life, e.g. through internships, competitions, cooperaration in commissioning of theses, etc.

Selected talented students cooperate with MIAS primarily in the framework of the International Office, where they particiapte in demanding internationalization tasks.

3.7. Support for students with socio-economic disadvantages

At **the Faculty of Civil Engineering**, students can, in case of necessity, apply for an individual social scholarship. The faculty grants such scholarships based on documents that students have to submit and that confirm their socio-economic disadvantage (e.g. a confirmation of state social support). The Faculty of Civil Engineering cooperates with ELSA, the Guidance and Support Centre for Students with Special Needs at CTU. Teachers strive to pay maximum attention to students' specific needs.

In 2018, **the Faculty of Mechanical Engineering** closely cooperated with CIPS/ELSA in searching for and supporting students with specific needs. The study department is a liaison office for the ELSA centre and the respective faculty's department aiming to meet the recommendations issued by ELSA based on an agreement with the student. As in

previous years, also in 2018 the faculty actively sought out students with specific needs and offered them help in organization of studies or modification of their study plans. A dean's working group responsible for quality of studies closely cooperated with these students and helped them organize their timetable or provide technical support for their studies.

Based on applications, **the Faculty of Electrical Engineering** grants students in need social scholarships and also receives suggestions for assessment from the ELSA centre, which it strives to satisfy to a maximum extent.

At **the Faculty of Nuclear Sciences and Physical Engineering**, students can, in case of necessity, apply for an individual social scholarship, which is awarded by the dean based on an application. The faculty also cooperates with CIPS, or ELSA, which is set up by the CTU Rector's Office and which is tasked with providing help to students.

Through the coordinator for studies, **the Faculty of Architecture** identifies students with socio-economic disadvantages and solves their problems individually.

In order to ensure fair access and equal opportunities for students with special needs, the faculty cooperates with the CTU Support Centre for Students with Special Needs, ELSA. The centre provides support to both study applicants and students.

At **the Faculty of Transportation Sciences**, no system to identify socio-economically disadvantaged students has been set up. We respect potential suggestions of the specialized parts of CTU - CIPS and ELSA.

The Faculty of Biomedical Engineering offers financial support to students with socio-economic disadvantages. Five students in difficult social situation, who duly submitted the required documents, received a total of CZK 82,350 in 2018. Together with their application the students had to submit a confirmation by a state social authority in writing to the effect that the family income determined for the purposes of child benefits in a calendar year stated in the document did not exceed the minimum family income multiplied by the coefficient 1.5. Other students had a possibility to apply for special-purpose scholarships in case they found themselves in a difficult social situation.

The Faculty of Information Technology closely cooperates with the Support Centre for Students with Special Needs, ELSA. If students meet the set requirements, they receive a social scholarship; also special-purpose scholarships are awarded in individual cases.

At **the Masaryk Institute of Advanced Studies**, students with socio-economic disadvantages are identified based on individual work of the study department staff, with whom students discuss their specific needs. Apart from that, they can also see their study coordinator during their office hours, who, among other things, also methodologically supervises the work of the study department.

The Masaryk Institute cooperates with the Support Centre for Students with Special Needs, ELSA.

3.8. Support for parents among CTU students

CTU set up the university primary school and kindergarten Lvíčata, intended for children of CTU students and employees. Education at the CTU primary school and kindergarten is focused on the support of development of skills in technical disciplines and natural sciences. Children are also acquainted with the life at the university.

Changes in the CTU Study and Examination Rules made in 2018 mean that students-parents can now choose whether they want to study according to an individual study plan or whether they want to suspend their studies during the recognized parenthood period. Whichever option they choose, this time will not be included in the period of study. A combination of the two options is also possible.

Aside from measures set forth in the Act on Higher Education Institutions, **the Faculty of Civil Engineering** provides students-parents with individual consultancy services concerning the course of the studies (e.g. a layout of the study plan, suspension of studies, setting up an individual study plan). The faculty has always supported the project of the university Kindergarten Lvíčata, CTU University for Kids, and it also informs students-parents about the possibility of baby-sitting at the Faculty of Electricak Engineering.

The Faculty of Mechanical Engineering strives to accommodate the needs of students-parents in accordance with internal regulations guiding the studies of students-parents and based on the faculty's resources. The study department has one specialized employee that exclusively deals with students-parents and ensures they receive full service as stipulated by relevant regulations and in accordance with the faculty's possibilities.

The dean at **the Faculty of Electrical Engineering** grants maximum parent scholarships to support studying parents. Apart from that, a "baby-sitting room" was established at FEE and FCE, where students can leave their children in order to be able to attend exams, workshops, credit tests, etc.

The Faculty of Nuclear Sciences and Physical Engineering has no own mechanism to support students-parents. In this respect, it complies with relevant legal regulations and the CTU methodological guideline. In general, the faculty offers part-time jobs for employees coming back from parental leave and it fully supports the Primary School and Kindergarten Lvíčata, established and operated by CTU, which is primarily intended for students and employees at CTU.

The Faculty of Architecture adopts individual approach to students-parents, for instance, it offers help in creation of individual study plans.

The Faculty of Transportation Sciences fully complies with the Higher Education Act, the Study and Examination Rules for Students of CTU in Prague and Methodological Guideline No. 3/2015 on the support of parents-students at CTU in Prague.

With respect to the support of parents, **the Faculty of Biomedical Engineering** complies with Methodological Guideline No. 3/2015 on the support of parents-students at CTU in

Prague. Students-parents are supported by modifications of the interruption of studies, extension of the deadlines to fulfil their study obligations and exclusion of the recognized parenthood period from the total period of studies. In 2018, a total of 23 students-parents were registered at the faculty. The above mentioned support was also provided to female students in connection with pregnancy or childbirth.

The Faculty of Information Technology complies with the methodological guideline on the support of parents-students.

At **the Masaryk Institute of Advanced Studies**, in accordance with the CTU Study and Examination Rules, students are entitled to special modifications of the interruptions of studies, extension of the deadlines to fulfil their study obligations and exclusion of the recognized parenthood period from the total study period in connection with pregnancy, childbirth and parenthood. These modifications are governed by the methodical guideline on the support of students-parents.

3.9. Statistics – students and scholarships

Tab. 3.1

Students in accredited study programmes (number)								
Groups of accredited study programmes	**KKOV**	**Bachelor study programmes**		**Follow-up master study programmes**		**Doctoral study programmes**		**TOTAL**
		P	**K/D**	**P**	**K/D**	**P**	**K/D**	
Faculty of Civil Engineering								
Technical sciences	21–39	2079	0	1074	0	205	189	**3547**
Faculty total		2079	0	1074	0	205	189	**3547**
Of which women		845	0	457	0	73	66	**1441**
Of which foreigners		321	0	79	0	18	8	**426**
Faculty of Mechanical Engineering								
Technical sciences	21–39	1492	91	823	43	130	131	**2710**
Faculty total		1492	91	823	43	130	131	**2710**
Of which women		125	11	86	3	23	15	**263**
Of which foreigners		189	8	191	3	26	16	**433**
Faculty of Electrical Engineering								
Natural sciences	11–18	427	0	290	0	0	0	**717**
Technical sciences	21–39	1126	57	537	23	165	137	**2045**
Faculty total		1553	57	827	23	165	137	**2762**
Of which women		228	8	116	4	17	24	**397**
Of which foreigners		353	8	182	2	44	32	**621**
Faculty of Nuclear Sciences and Physical Engineering								
Technical sciences	21–39	636	0	208	0	169	120	**1133**
Faculty total		636	0	208	0	169	120	**1133**
Of which women		234	0	77	0	39	29	**379**
Of which foreigners		153	0	39	0	26	15	**233**

Faculty of Architecture								
Technical sciences	21–39	764	0	507	0	81	57	**1409**
Culture and art	81, 82	86	0	54	0	6	0	**146**
Faculty total		850	0	561	0	87	57	**1555**
Of which women		520	0	329	0	44	29	**922**
Of which foreigners		212	0	124	0	11	6	**353**
Faculty of Transportation Sciences								
Technical sciences	21–39	736	62	252	95	61	66	**1272**
Faculty total		736	62	252	95	61	66	**1272**
Of which women		170	24	91	28	24	14	**351**
Of which foreigners		194	7	42	16	9	6	**274**
Faculty of Biomedical Engineering								
Technical sciences	21–39	315	61	235	194	48	80	**933**
Health care, medical and pharmacological sciences	51–53	539	0	0	0	0	0	**539**
Faculty total		854	61	235	194	48	80	**1472**
Of which women		591	13	159	89	25	32	**909**
Of which foreigners		73	0	20	5	3	11	**112**
Faculty of Information Technology								
Natural sciences	11–18	1528	134	444	0	26	25	**2157**
Faculty total		1528	134	444	0	26	25	**2157**
Of which women		190	26	43	0	3	2	**264**
Of which foreigners		417	20	87	0	2	6	**532**
University institutes (studies outside faculties)								
Technical sciences	21–39	0	0	154	1	5	21	**181**
Social science and services	61, 67, 71–73	0	0	0	0	2	8	**10**
Economics	62, 65	445	0	114	44	1	2	**606**
Pedagogy, teacher training and social care	74, 75	0	205	0	0	0	0	**205**
Institutes total		445	205	268	45	8	31	**1002**
Of which women		268	71	174	31	2	10	**556**
Of which foreigners		35	2	21	7	1	0	**66**

Czech Technical University								
Natural sciences	11–18	1955	134	734	0	26	25	**2874**
Technical sciences	21–39	7148	271	3790	356	864	801	**13230**
Health care, medical and pharmacological sciences	51–53	539	0	0	0	0	0	**539**
Social science and services	61, 67, 71–73	0	0	0	0	2	8	**10**
Economics	62, 65	445	0	114	44	1	2	**606**
Pedagogy, teacher training and social care	74, 75	0	205	0	0	0	0	**205**
Culture and art	81, 82	86	0	54	0	6	0	**146**

TOTAL	10173	610	4692	400	899	836	**17610**
Of which women	3171	153	1532	155	250	221	**5482**
Of which foreigners	1947	45	785	33	140	100	**3050**

P = full-time study K/D = part-time study / distance study

In 2018, no students enrolled in master study programmes at CTU.

Tab. 3.2

Self-funding students* (number)								
Groups of accredited study programmes	**KKOV**	**Bachelor study programmes**		**Follow-up master study programmes**		**Doctoral study programmes**		**TOTAL**
		P	**K/D**	**P**	**K/D**	**P**	**K/D**	
Faculty of Civil Engineering								
Technical sciences	21–39	25	0	6	0	4	0	**35**
Faculty of Mechanical Engineering								
Technical sciences	21–39	71	0	155	0	10	0	**236**
Faculty of Electrical Engineering								
Natural sciences	11–18	0	0	11	0	0	0	**11**
Technical sciences	21–39	50	0	50	0	21	8	**129**
Faculty of Nuclear Sciences and Physical Engineering								
Technical sciences	21–39	0	0	1	0	1	1	**3**
Faculty of Architecture								
Technical sciences	21–39	0	0	11	0	0	2	**13**
Faculty of Transportation Sciences								
Technical sciences	21–39	55	0	4	0	0	0	**59**
Faculty of Biomedical Engineering								
Technical sciences	21–39	13	0	3	0	0	1	**17**
Faculty of Information Technology								
Natural sciences	11–18	61	0	6	0	0	1	**68**
Technical sciences	21–39	0	0	0	0	0	0	**0**
University institutes (studies outside faculties)								
Economics	62, 65	0	0	1	0	0	0	**1**
Czech Technical University								
Natural sciences	11–18	61	0	17	0	0	1	**79**
Technical sciences	21–39	214	0	230	0	36	12	**492**
Economics	62, 65	0	0	1	0	0	0	**1**
TOTAL		**275**	**0**	**248**	**0**	**36**	**13**	**572**

P = full-time study K/D = part-time study / distance study

Note: *A self-funding student is a person (student) who covers all their study expenses themself, and the university does not include them in the total number of students for the calculation of state support for educational activities.

In 2018, no self-funding students enrolled in master study programmes at CTU.

Tab. 3.3

Unsuccessful studies* in the first year** of studies (in %)										
Groups of accredited study programmes	**Bachelor study programmes**			**Follow-up master study programmes**			**Doctoral study programmes**			**TOTAL**
	P	**K/D**	**TOTAL**	**P**	**K/D**	**TOTAL**	**P**	**K/D**	**TOTAL**	
Faculty of Civil Engineering	38	0	38	7	0	7	9	31	14	**24**
Faculty of Mechanical Engineering	33	67	37	8	50	12	15	9	13	**28**
Faculty of Electrical Engineering	38	64	40	19	36	19	17	33	21	**32**
Nuclear Sciences and Physical Engineering	54	0	54	9	0	9	6	0	6	**40**
Faculty of Architecture	28	0	28	6	0	6	19	50	22	**20**
Faculty of Transportation Sciences	46	77	49	12	28	18	16	40	24	**40**
Faculty of Biomedical Engineering	39	12	37	28	29	28	18	19	19	**34**
Faculty of Information Technology	46	70	48	21	0	21	30	0	30	**44**
University institutes (studies outside faculties)	29	15	24	33	0	33	0	0	0	**27**
TOTAL	**39**	**53**	**40**	**14**	**32**	**15**	**13**	**23**	**16**	**31**

P = full-time study K/D = part-time study / distance study

Note: *The number of unsuccessful studies refers to the number of studies started in the given year n and the sum total of unsuccessful studies of this cohort in the years n and n+1. See Methodology.

Note: **This refers to all students enrolled in the given university in the year n, whether they enrolled for the first time or not.

In 2018, no master study programmes were implemented at CTU.

Tab. 3.4

Student scholarships* by purpose (number of natural persons)		
Purpose of scholarship	**Number of students**	**Average scholarship in CZK****
For outstanding study results, pursuant to Section 91 Para 2 Letter a)	2 644	7 971
For outstanding scholarly, scientific, research, development, artistic or other creative results, pursuant to Section 91 Para 2 Letter b)	1 109	10 931
For research, development and innovation activities, pursuant to a special regulation, pursuant to Section 91 Para 2 Letter c)	836	23 901

For a student with difficult social conditions, pursuant to Section 91 Para 2 Letter d)	39	19 974
For a student with difficult social conditions, pursuant to Section 91 Para 3	21	12 016
For other cases worthy of special consideration, pursuant to Section 91 Para 2 Letter e)	17 186	5 527
Of which, housing scholarships	13 799	3 933
In support of studies abroad, pursuant to Section 91 Para 4 Letter a)	820	20 736
In support of studies in the Czech Republic, pursuant to Section 91 Para 4 Letter b)	95	55 384
For students in doctoral degree programmes, pursuant to Section 91 Para 4 Letter c)	994	84 738
Other scholarships	659	13 599
TOTAL* **	**24 403**	**25 478**

Note: *Regardless of the source of funding, it does not concern MEYSfunds.
Note: **The share of the total sum paid out for the given type of scholarship in a year and the total amount of natural persons who received the given scholarship at least once in the given year. In case one person received the scholarship more than once, that person is included only once, but the calculation reflects the sum total of the amounts paid out to that person.
Note: ***Since the table gives the number of physical persons that can be recipients of multiple scholarships, the "total" number is not a sum of the previous lines, but it gives the real total number of students.

4

4. Graduates

4.1. Cooperation between CTU and graduates

In 2014, the Association of Alumni and Friends of CTU (www.absolventicvut.cz) was established at CTU. In 2018, the Association organized eight events for its members, which included lectures of renowned alumni and other interesting guests as well as excursions (research department in Řež, Studio D and the water management laboratory at the Faculty of Civil Engineering) and sports and social events, including the regular Dragon Boat race organized by CTU and the VItava Run race. The Association members were also regularly invited to social events held by CTU in 2018 (such as the ball, concerts, colloquia, etc.). Last year CTU also launched a new website of the Alumni Association, which is better organized and members of the association can thus be better informed.

Tab. 4.1

Graduates of Accredited Study Programmes (Numbers of Studies Graduated)								
Groups of accredited study programmes	**KKOV**	**Bachelor study programmes**		**Follow-up master study programmes**		**Doctoral study programmes**		**TOTAL**
		P	**K/D**	**P**	**K/D**	**P**	**K/D**	
Faculty of Civil Engineering								
Technical sciences	21–39	466	0	596	0	1	46	**1109**
Faculty total		466	0	596	0	1	46	**1109**
Of which women		195	0	223	0	0	14	**432**

Of which foreigners		48	0	55	0	0	4	**107**
Faculty of Mechanical Engineering								
Technical sciences	21–39	352	13	235	10	17	15	**642**
Faculty total		352	13	235	10	17	15	**642**
Of which women		38	4	30	2	2	2	**78**
Of which foreigners		31	0	41	0	1	0	**73**
Faculty of Electrical Engineering								
Natural sciences	11–18	57	0	101	0	0	0	**158**
Technical sciences	21–39	240	11	182	13	7	54	**507**
Faculty total		297	11	283	13	7	54	**665**
Of which women		43	1	32	0	0	2	**78**
Of which foreigners		54	0	50	2	2	6	**114**
Faculty of Nuclear Sciences and Physical Engineering								
Technical sciences	21–39	87	0	101	0	5	31	**224**
Faculty total		87	0	101	0	5	31	**224**
Of which women		33	0	27	0	1	8	**69**
Of which foreigners		17	0	17	0	4	9	**47**
Faculty of Architecture								
Technical sciences	21–39	137	0	209	0	14	1	**361**
Culture and art	81, 82	35	0	17	0	0	0	**52**
Faculty total		172	0	226	0	14	1	**413**
Of which women		97	0	134	0	7	0	**238**
Of which foreigners		28	0	42	0	2	0	**72**
Faculty of Transportation Sciences								
Technical sciences	21–39	104	6	89	20	0	1	**220**
Faculty total		104	6	89	20	0	1	**220**
Of which women		30	1	27	7	0	0	**65**
Of which foreigners		13	0	9	6	0	0	**28**
Faculty of Biomedical Engineering								
Technical sciences	21–39	102	31	81	83	1	1	**299**
Health care, medical and pharmacological sciences	51–53	115	0	0	0	0	0	**115**
Faculty total		217	31	81	83	1	1	**414**
Of which women		164	7	54	38	1	1	**265**
Of which foreigners		17	0	9	1	0	0	**27**
Faculty of Information Technology								
Natural sciences	11–18	258	4	145	0	0	10	**417**
Faculty total		258	4	145	0	0	10	**417**
Of which women		23	2	12	0	0	0	**37**
Of which foreigners		54	0	18	0	0	0	**72**
University institutes (studies outside faculties)								
Technical sciences	21–39	0	0	96	3	0	1	**100**
Economics	62, 65	213	0	0	0	0	0	**213**
Pedagogy, teacher training and social care	74, 75	0	41	0	0	0	0	**41**

Institutes total	**213**	**41**	**96**	**3**	**0**	**1**	**354**
Of which women	156	16	61	1	0	0	**234**
Of which foreigners	4	0	6	1	0	0	**11**

Czech Technical University								
Natural sciences	11–18	315	4	246	0	0	10	**575**
Technical sciences	21–39	1488	61	1589	129	45	150	**3462**
Health care, medical and pharmacological sciences	51–53	115	0	0	0	0	0	**115**
Economics	62, 65	213	0	0	0	0	0	**213**
Pedagogy, teacher training and social care	74, 75	0	41	0	0	0	0	**41**
Culture and art	81, 82	35	0	17	0	0	0	**52**
TOTAL		**2166**	**106**	**1852**	**129**	**45**	**160**	**4458**
Of which women		779	31	600	48	11	27	**1496**
Of which foreigners		266	0	247	10	9	19	**551**

P = full-time study K/D = part-time study / distance study; the numbers of studies (not natural persons) successfully completed in period 1 January – 31 December are reported.

In 2018, no master's degree was undertaken (or completed) at CTU.

4.2. Employment and employability of CTU graduates, measures to increase employability, research on graduates' employment, impact on the preparation of study programmes

CTU supports employability of students primarily by providing quality education and by various other ways. One of them is a database of vacancies on the CTU Career Centre website (www.kariernicentrum.cz), where an updated list of job positions, part-time jobs and internships that are suitable for CTU students is published.

Another way to support employability of students is the Mentoring programme, which was in its 12th year in 2018. Under the programme students can acquire valuable experience in their field of study and start a future cooperation. Under the Mentoring programme, a close cooperation with CTU alumni has been established where the alumni take on the role of mentors for selected students.

The third way to support employability of students is employment consultancy sessions, where students can get information about the labour market from HR professionals working for technology companies.

In 2018, CTU was also involved in the national survey ABSOLVENT 2018 and the international survey EUROGRADUATE organized by the Ministry of Education, Youth and Sports and focused on opinions and experience of university graduates concerning

primarily the transition to the labour market and the related evaluation of acquired education.

4.3. Cooperation between CTU and future employers

As mentioned above, CTU publishes, through the CTU Career Centre (http://www.kariernicentrum.cz), a list of vacancies opening in firms for students and fresh graduates.

There is also the Mentoring programme, under which professionals and managers at companies offer cooperation to selected students at CTU (mentoring.cvut.cz). Students had a possibility to get acquainted with the company and the job of the particular mentor and establish contacts already during their studies.

Apart from that, the Career Centre also provides students with topics of bachelor, master and doctoral theses commissioned by firms. Consequently, students were also able to work on real projects as part of their theses and cooperate with professionals working for the given companies as their consultants.

We also invite HR specialist from technology firms to discuss future employment opportunities with students during regular consultancy sessions. In addition, we organized "career corners" in the framework of the iKariera fair (27 and 28 March 2018), during which students met HR specialists at companies participating in the fair.

5. Interest in studying

5.1. Types of entrance examinations

Entrance examinations are organized at all CTU faculties and for all university programmes in which the Masaryk Institute of Advanced Studies participates.

The entrance examinations for bachelor study programmes at **the Faculty of Civil Engineering** were in the form of a multiple-choice written test in mathematics. This written test in mathematics was supplemented by an interview on architecture for the Architecture and Civil Engineering programme, in which applicants presented to the commission a motivation sheet, which was designed to check the applicant's interest in the study programme, and three of the applicant's own graphic designs. Applicants who had achieved the required grades in mathematics at high school or the required grade in mathematics in the high school leaving examinations were not required to take the written test in mathematics. Applicants who took the Mathematics+ leaving examinations had an advantage. The interview in architecture is obligatory for everyone. The entrance examinations for master study programmes and fields of study took the form of a multiple-choice written test on topics connected with the given specialization. For the Architecture and Civil Engineering programme, there was an interview about architecture and architectural design of buildings, which included a presentation of the student's own design portfolio.

The faculty organizes the entrance examinations using its own resources, with substantial help from relevant departments that specialize in the subjects related to the entrance examinations.

Every year, **the Faculty of Mechanical Engineering**, CTU in Prague, organizes two types of entrance examinations:

1. The entrance examinations for bachelor study programmes take the form of a written test in high school mathematics. There are 10 exercises, about two thirds of which are from arithmetic and one third is exercises with verbal instructions. Applicants must calculate each exercise on a separate piece of paper and enter the results into a form. The results as well as the correctness of the solution process are evaluated. In addition, apart from the basic test, students can apply for an advanced test on a level that corresponds to the Mathematics+ didactic test. Based on the results of the advanced test, the best students are put in one of the two VIP groups of the best students.
2. The entrance examinations for follow-up master study programmes consist of three written tests that take 3 x 1 hours. The tests focus on the subject matter that is part of the state final examinations in the bachelor study programme in Theoretical Fundamentals of Mechanical Engineering at FME. They include the following areas: Applied Mathematics, Continuum Mechanics, and Machine Parts, Materials and Technologies. All three tests are in writing and are a combination of multiple choice questions and exercises from arithmetic, where the applied method and the selected solution process are also evaluated, together with the result.

The entrance tests for bachelor study programmes at **the Faculty of Electrical Engineering** consist solely of a test in mathematics. The entrance examination consists of a written test in mathematics. The test consists of 15 exercises, and applicants have 60 minutes to complete the test. The test is prepared by the Department of Mathematics. Sample tests are available on the faculty's website. The maximum number of points available is 20. The tests are evaluated by a commission consisting of maths teachers and representatives of the study programmes, appointed by the dean of the faculty. The test results are published on the faculty's website (minimum number of points needed for admission to individual programmes).

Applicants for master study programmes are accepted to the available selected field of study on the basis of the results of entrance examinations. The entrance examinations differ according to the study programme. The exams are in writing, and details are published on the website of each study programme. In cases where the capacity for the preferred field of study is exceeded, applicants can be admitted to their second choice field of study within the programme.

Requirements for admission to bachelor study programmes at **the Faculty of Nuclear Sciences and Physical Engineering** include:

High school leaving examination in mathematics or a certificate equivalent to the school leaving examinations.

Students must be able to study in the Czech language (school leaving examination in the Czech language) or present a certificate of an equivalent level (for more information contact the study department) – this does not apply to students from Slovakia (school leaving examination in the Slovak language).

Successful completion of the admission procedure: the entrance examination, which the dean can forgive, is organized in the form of a written test in mathematics. The test consists of multiple-choice questions. The applicants have to submit the results together with any auxiliary calculations on signed sheets of paper. During the examination, applicants are not allowed to use any electronic devices (mobile phones, calculators, etc.) or other aids (math tables, etc.). The entrance examination covers the following topics:

1. Algebraic formulas: solving polynomials, fractions, powers, roots, or defining conditions when algebraic formulas can be solved.
2. Functions – basic notions, properties of functions, composite functions and inverse functions.
3. Functions – linear, quadratic fractional, power, goniometric, exponential a logarithmic.
4. Real-valued functions: linear, with the unknown in the denominator, quadratic, with roots, exponential, with logarithms, with absolute values and with goniometric functions.
5. Inequations: linear, quadratic, power, root, with absolute values, goniometric.
6. Sets of two linear equations and sets with a linear and quadratic equation.
7. Sequences and series: arithmetic and geometric sequences, sums of geometric series.
8. Complex numbers: basic notions and solution of complex formulas.
9. Analytic geometry in a plane: basic geometric figures, conic sections.

Graduates from study programmes at the faculty may be exempted from entrance examinations based on the results of the state bachelor examination. For applicants from other universities, the faculty organizes entrance examinations covering the knowledge required by the given field of study.

At **the Faculty of Architecture**, the entrance examinations consist of two rounds; an aptitude test is part of the 1st round. For bachelor study programmes: 1st round – a drawing test, a test in spatial imagination, a general knowledge test, a general study aptitude test taken in the framework of the National Comparative Exams (SCIO); 2nd round – an oral exam – an interview.

Master study programmes: 1st round – portfolio evaluation, 2nd round – an oral exam – an interview.

At **the Faculty of Transportation Sciences**, in a written test in mathematics, bachelor study programme applicants had to prove their ability to independently solve problems in high school mathematics. The exam was in the form of a multiple-choice written test. The tests were prepared exclusively by experts at the Institute of Applied Mathematics, Faculty of Transportation Sciences. Applicants for follow-up master study programmes took written tests in two fields relevant to their chosen study programme. The examinations were prepared exclusively by experts at the institutes of the Faculty of Transportation Sciences.

At **the Faculty of Biomedical Engineering**, the entrance examinations both for bachelor programmes and for follow-up master programmes consisted of multiple-choice tests,

and were prepared using the faculty's own resources. For the bachelor study programmes, the tests were in biology and physics. For the Medical Laboratory Technician study programme, there were tests in biology and chemistry. The subject fields were based on Czech grammar school curricula in the relevant disciplines.

For the follow-up master study programmes, the entrance examinations also consisted of multiple-choice tests. For the study programme in Biomedical and Clinical Technology, some of the questions were on biology, some were on physics, and the rest were relevant to the applicant's chosen field of study. For the follow-up master study programme in Population Protection, the test consisted only of questions related to this field of study, based on the bachelor study programme in civil protection.

A minimum number of points was set as the pass mark for each of the tests. The tests were evaluated anonymously from scanned copies of the answer sheets using special software. For further details visit http://www.fbmi.cvut.cz/fakulta/zaverecne-zpravy.

At **the Faculty of Information Technology**, the entrance examinations were prepared using the faculty's own resources, and they consisted of a multiple-choice written test. The entrance examinations are based on the requirements for the state school leaving examinations in mathematics.

At **the Masaryk Institute for Advanced Studies**, the entrance examination consisted of a written test. The test's structure is stipulated by the Conditions for Admission Procedures. The tests were prepared using the faculty's own staff – academic workers who teach the relevant subjects. The evaluation of the tests was automated – MIAS has a license from Acrea – Remark Office OMR for evaluation of tests. This software includes the possibility to create reports on the results of the entrance examinations. The admission committee evaluates the applicants in compliance with the Conditions for Admission Procedures, including all documentation presented by the students on studies that they have completed previously, evaluates the results of the entrance examinations, and decides whether the applicant should be accepted or rejected.

5.2. Cooperation between CTU and high schools

All faculties and the Masaryk Institute of Advanced Studies develop cooperation with high schools. Below you can find events organized in the framework of this cooperation.

At **the Faculty of Civil Engineering**, internships for high school students are organized in the spring and in the autumn. High school students select a bachelor study programme/specialization and attend the lessons for three days. Students of the given specialization act as their guides. The faculty also organizes Open Doors Days for study applicants. The Hall of the Year JUNIOR competition is also organized for high school students, whose finals take place in the faculty premises, as well as a photography competition under the title "With Your Own Eyes", whose winner is announced by the faculty's dean. The faculty welcomes excursions from high schools and organizes lectures at high schools and it regularly attends the Gaudeamus Fairs in Brno and Prague. The Higher Vocational School of Construction and Secondary Technical School,

Prague 1, Dušní 17, has been recognized as so-called faculty school. FCE supports participation of primarily doctoral students in instruction at high schools.

In 2018, **the Faculty of Mechanical Engineering** organized regular Open Doors Days for high school students on three different dates. The last Open Doors Day was held right before the deadline for submitting applications to study at FME and participants were able to hand in their applications to the FME study department during the event. In addition, FME CTU has a long tradition of organizing the Stretech conference, attended by high school students from all over the Czech Republic. On the occasion of this conference, the faculty's dean and vice-deans meet with the representatives of high schools that accompany the participants in the conference. The faculty also organizes individual visits of different departments for high school students according to the schools' specialization. Strojmánie, an event organized in cooperation with NTM and intended for pupils and students of primary and high schools, took place in the faculty' premises on Karlovo Square. In addition, students of doctoral study programmes prepare individual presentations about the faculty which they then present at their home high schools. The faculty provides appropriate promotional materials for these activities.

In the framework of cooperation with high schools, **the Faculty of Electrical Engineering** organizes promotional trips with the aim to inform study applicants about study programmes offered by the faculty, the requirements of the entrance examination, events for high school students (Open Doors Days, competitions, courses, etc.), possibilities to study abroad and employability of graduates. In 2018, a total of 45 individual trips to high schools were organized while at the same time four sample lessons and two mentoring recruitment sessions for high school female students took place. A closer cooperation is developed with so-called faculty schools (until now 12 such schools have been recognized), primarily in the following areas:

- Enhancing interest in natural sciences (primarily mathematics, physics, etc.) and technical disciplines (primarily ICT, the Internet, electronics, cybernetics, electrical engineering, etc.) in high school students – by offering specialized visits and popularization events at the faculty (Christmas with Physics, etc.).
- Searching for and working with gifted students – Students' Professional Activities, cooperation on students' high school theses (access to laboratories, consultations, reviewes), specialized competitions for children and the youth.
- Joint grant projects – cooperation in searching for, preparation and possible implementation of suitable grant projects in the areas of common interest (Operational Programme Prague Competitiveness, Open Faculty, etc.).
- Support to further education of high school teachers – offering specialized consultations with faculty staff, organization of seminars for teachers of natural sciences and technical disciplines (Autumn School for High School Teachers, etc.).

The Faculty of Nuclear Sciences and Physical Engineering uses a wide range of regular events to acquaint high school students with the possibilities to study at FNSPE. The faculty also offers individual visits for groups of students to the faculty and its departments (incl. excursion to the school's nuclear reactor VR-1 and Tokamak Golem)

and visits of teachers or students at FNSPE to high schools with a specially devised programme that has been agreed with the high school in question.

The most popular events include: Be a Medical Physicist for One Day, One Day at FNSPE, Be a Woman Scientist for One Day, MasterClasses, Week of Science at FNSPE, etc. In Děčín, the faculty runs a club called "Coding for Kids" and cooperates with Grammar School Děčín, where it organizes seminars for talented students as well as other events.

The faculty supports high school competitions, such as Olympics – in chemistry, mathematics, physics; Students' Professional Activities; AMAVET; and Young Physicists' Tournament – the faculty organizes the introductory orientation part.

FNSPE also organizes a preparatory course in mathematics and physics for high school students.

The Faculty of Architecture informs high schools directly or through university systems. It also offers guided excursions of the faculty to high schools, organizes weekend workshops for study applicants and regularly attends the Gaudeamus fairs (Brno, Prague) and in November, March and June organizes Open Doors Days. The faculty opens its doors and offers educational programmes and exhibitions also as part of the Prague Museum Night.

In 2018, **the Faculty of Transportation Sciences** continued in a successful project for high school teachers, under which they can visit the faculty for 1-2 days and see the laboratories and other faculty departments. The costs of these visits are covered by the faculty. The model has met with great success, because it is often the teachers at high schools who encourage students to a study at a particular university. Throughout the year, faculty representatives regularly attend trade fairs and promotional events aimed at promoting studies at the faculty. At the same time the faculty intensified promotion on social media aimed at high school students. As regards project-oriented teaching, the main project we used in 2018 for promotion of FTS at high schools was the MotoStudent project. The motorcycle built by the faculty students, with which they participated in an international race in Spain, was exhibited at all faculty promotional events in 2018 and it always attracted a lot of attention. All of the above mentioned activities culminated during the Open Doors Days in November 2018 and February 2019, when a great number of study applicants visited the faculty. The Faculty of Transportation Sciences uses its specialized Transportation Laboratory to promote the project "Management and Organization of Railway Traffic", under which regular excursions and specialized lectures are held for high schools from Prague and outside Prague. Active cooperation with Secondary Technical School of Transportation (SPŠD) Masná, Prague 1, is implemented at the department in the form of an all-year practical class in the subject "Management of Railway Traffic". Since 2017, active cooperation has been developed, which consists in the participation of 1st to 4th year students from SPŠD Masná, specialization Electrical Engineering (26-41-M/01), in the operation and development of the Transportation Hall of the Faculty of Transportation Sciences in the form of a voluntary out-of-school activity. On 22 February 2018, a traditional specialized lecture was held at the Department of Mechanics and Materials on the subject of development of elasticity and its role in physics, including practical demonstrations of

tensile testing at the Laboratory of Experimental Mechanics K618 on a Louis Schopper test machine. The lecture was attended by students in the seventh grade of the Grammar and Music School of the Capital of Prague. The lecture was presented by doc. Ing. Jan Řezníček, CSc. Cooperation with high schools is also organized at the Děčín detached department, which too focuses on popularization of technical education and the opportunity to study at university in the region. An extended excursion for students of the Higher Vocational and Secondary Technical School of Mechanical Engineering, Construction and Transportation, Děčín, and Secondary Technical School Česká Lípa took place as part of the Open Doors Day on 1 February 2018. In this way, high school students had a possibility to see the premises and the facilities and to try transport modelling, using SW and HW for visualisation, including 3D projections at the Laboratory for Simulation and Visualisation. Other events, in which the Děčín department took part, included the 2018 Technodays fair held in April 2018 by the Regional Chamber of Commerce Chomutov and School Děčín 2018 – A Path to Education and Career organized by the city of Děčín in cooperation with the Regional Chamber of Commerce, representatives of high schools in Děčín and the liaison office of the Labour Office of the Czech Republic Děčín. In the framework of long-term cooperation with high schools, the FTS detached department in Děčín also participated in the project H2AC4schools - Races of Saxon and Czech Schools – the World of Hydrogen Electromobility PrOJETÍ, in which the detached department together with partner institutions from the Czech Republic and Germany coordinates development and construction of hydrogen racing cars for teams of high school students and organizes the international race series.

The Faculty of Biomedical Engineering cooperated with regional high schools in the form of specialized lectures and it promoted studies at CTU also through scientific and research outcomes. In 2018, the faculty successfully participated in committees assessing students' scientific work. Faculty employees participated in a regional round of students' scientific work in the Central Bohemian Region as chairs or members of selected assessment committees.

Same as every year, the faculty invited students from high schools in Kladno to its Open Doors Days (9 February and 23 November 2018). High schools based in Kladno and Central Bohemia were also invited to attend cultural events and events aimed at promoting science and technology (Majáles, Prague Museum Night, Night of Scientists, Science Festival, etc.). The faculty also attended the following fairs: Gaudeamus Brno, Gaudeamus Prague, Trade Fair of Prague Public Universities and the Akadémia fair in Bratislava, which are intended primarily for high school students.

The faculty also took part in Technodays in Chomutov, an event aimed at high schools, where it presented a lecture for high school students. It also presented the possibilities to study at FBME at events in Žatec and Litoměřice, e.g. at the Grammar School Na Zatlance.

The Faculty of Biomedical Engineering is a so-called faculty school for Secondary Technical School of Electrical Engineering (SPŠE) V Úžlabině. As part of this activity, the faculty organized lectures on selected topics and part of application classes as well as specialized Open Doors Days. During the Open Doors Days, students of the above mentioned faculty SPŠE received information about the accredited fields of study

taught at the faculty and had an opportunity to see specialized laboratories intended for instruction and scientific and research activities of the faculty.

The Faculty of Information Technology has a lasting cooperation with the Grammar School Arabská, which as one of the first high schools in the Czech Republic offers the specialization programming/informatics. One of FIT staff works as an external lecturer at the school and teaches the subject Operating Systems as part of this specialization, including being an examiner in the state school leaving exams. In the winter examination period, we organize a so-called "Specialized Week" at the faculty for fourth year students of the said specialization. It is a one-week (30 lessons) intense training with practically oriented lessons, which takes place in our computer classrooms. Thanks to this cooperation the students the Grammar School Arabská are well informed about the faculty and a relatively high number of them become students at the Faculty of Information Technology each year.

At **the Masaryk Institute of Advanced Studies**, cooperation with high schools was organized mainly as part of the study programme in Specialization in Pedagogy; in the framework of subjects of theses, projects were solved that enhance the attractiveness, competitiveness and material and technical facilities at technical high schools. The institute cooperates with high schools in practical training of students of the study programme in Specialization in Pedagogy, invites students and school counsellors to Open Doors Days and informs high schools about study programmes and the admission procedure.

CTU continuously develops cooperation with high schools as well as primary schools. Professional teams composed of CTU employees and students presented information about the possibilities to study at CTU at selected schools. In this way, high school students and their teachers received information about Open Doors Days, study programmes and fields of study, preparatory courses at individual faculties, important deadlines for submitting applications and other information on attractive topics from the field of science, development, research and employability of CTU graduates. In addition, popularization events prepared at CTU, such as the Science Festival, the Night of Scientists and the presentation of CTU in the National Technical Museum as part of the Prague Museum Night, were presented at primary and high schools.

Excursions to the CTU campus and to individual faculties were organized for partner high schools, as well as for some primary schools, where interesting topics solved at CTU were presented to pupils and students, in which CTU students can also participate during their studies. The aim of these excursions was to motivate participants to study technical programmes and fields of study at technical universities.

At high schools and during popularization events, CTU obtained contacts of high school students through questionnaires, which it used to regularly send out information e-letters about planned events, news, study opportunities and other interesting information about CTU.

Every year, CTU participates in the Gaudeamus Fairs focused on college, university and lifelong learning. The fairs took place in January in Prague and in November in Brno. CTU's exposition presented information about the possibilities of study together with

interesting projects using interactive exhibits. Received feedback shows that high school students have a very positive opinion of our university, as evidenced by the fact that in 2018 CTU won the first prize for the best exhibition at the fair in Prague and in Brno it came second. At the fairs, we managed to actively communicate not only with potential students, but also with school counsellors and teachers at high schools and to establish a deeper cooperation with them. Most CTU faculties also participated in the Akadémia International Study and Career Fair in Bratislava.

At the beginning of 2018, CTU organized and produced a travelling fair of Prague public universities, which took place at the Faculty of Civil Engineering this year. The fair was attended by eight Prague public universities.

CTU organized the 9th edition of the correspondence competition on the borderline between mathematics, informatics, physics and logical thinking called the Lions' Den. It is intended for pupils of the 6th to 9th grade of primary schools and corresponding grades of multi-year grammar schools. Its aim was to inform about studies at technical universities in the form of a fun and exciting path to knowledge. A summer holiday camp called Lions' Den (www.jamalvova.cz) was organized for the best participants.

Another interesting activity organized by CTU for high school female students was the Summer IT School for Girls. This year, a fourth edition of this activity for female students at high schools throughout the Czech Republic was organized. It is a one-week camp, where accommodation and catering are provided by CTU. Girls learned the basics of IT disciplines so that later on they can specialize in a field that they like best. Besides lectures with teachers, they could also participate in excursions to interesting departments at CTU and attend inspiring lectures by successful women in IT. On the last day, the girls worked in groups on tasks which they presented to the representatives of companies during the closing evening.

Tab. 5.1

Interest in studying at the university													
Groups of accredited study programmes	**KKOV**	**Bachelor study programmes**				**Follow-up master study programmes**				**Doctoral study programmes**			
		Number of study applicants	**Number of applications**	**Number of admitted students**	**Number of enrolled students**	**Number of study applicants**	**Number of applications**	**Number of admitted students**	**Number of enrolled students**	**Number of study applicants**	**Number of applications**	**Number of admitted students**	**Number of enrolled students**
Faculty of Civil Engineering													
Technical sciences	21–39	1197	1508	958	731	725	889	753	478	94	94	94	94
Faculty of Mechanical Engineering													
Technical sciences	21–39	967	1235	892	664	537	590	513	403	115	117	109	102
Faculty of Electrical Engineering													
Natural sciences	11–18	456	565	299	201	267	286	214	157	0	0	0	0

Technical sciences	21–39	1396	1625	919	576	444	469	347	253	112	113	94	93
Faculty of Nuclear Sciences and Physical Engineering													
Technical sciences	21–39	533	590	437	344	106	110	85	82	69	69	69	69
Faculty of Architecture													
Technical sciences	21–39	558	638	475	336	263	269	230	211	41	41	29	29
Culture and art	81, 82	117	122	41	31	20	20	7	6	2	2	2	2
Faculty of Transportation Sciences													
Technical sciences	21–39	604	748	554	397	213	232	148	130	31	33	11	11
Faculty of Biomedical Engineering													
Natural sciences	11–18	0	0	0	0	2	2	0	0	0	0	0	0
Technical sciences	21–39	394	459	198	143	404	469	267	241	35	35	33	33
Health care, medical and pharmacological sciences	51–53	516	700	309	262	0	0	0	0	0	0	0	0
Faculty of Information Technology													
Natural sciences	11–18	1437	2126	1043	930	376	408	268	227	9	9	8	8
Masaryk Institute of Advanced Studies													
Economics	62, 65	338	369	290	194	230	239	206	171	0	0	0	0
Pedagogy, teacher training and social care	74, 75	81	81	74	71	0	0	0	0	0	0	0	0

Czech Technical University													
Natural sciences	11–18	1893	2691	1342	1131	645	696	482	384	9	9	8	8
Technical sciences	21–39	5649	6803	4433	3191	2692	3028	2343	1798	497	502	439	431
Health care, medical and pharmacological sciences	51–53	516	700	309	262	0	0	0	0	0	0	0	0
Economics	62, 65	338	369	290	194	230	239	206	171	0	0	0	0
Pedagogy, teacher training and social care	74, 75	81	81	74	71	0	0	0	0	0	0	0	0
Culture and art	81, 82	117	122	41	31	20	20	7	6	2	2	2	2
TOTAL		**8594**	**10766**	**6489**	**4880**	**3587**	**3983**	**3038**	**2359**	**508**	**513**	**449**	**441**

P = full-time study K/D = part-time study / distance study

In 2018, no applications to master study programmes were submitted at CTU.


6

6. Academic staff

6.1. Academic Career System, motivation tools for remuneration of employees based on achievement

A Career System that would define the possibilities for a career growth of employees and its conditions is currently being prepared at CTU. The debates on the Career System at the CTU bodies are ongoing. The document draws on the Higher Education Act and also on the CTU Statute, which defines the basic conditions for the qualification categories of employees. Due to the state of affairs, the Career System has not been implemented yet in all constituent parts equally, or is not defined in all constituent parts. Consequently, heads of departments are responsible for motivation and career growth as part of the development of human resources.

Faculty of Civil Engineering

Due to the diversification of departments and the faculty's management system which relies on the responsibility of heads of departments, motivation tools for remuneration of employees are applied within individual departments and organizational units. Heads of departments are responsible for the remuneration of employees and use motivation tools that lead to the development of the department in accordance with the updated concept of development of the department. The content of the V3S component, extraordinary results in pedagogical work and the acquisition of projects and grants for

the department are most frequently used in evaluation. A unified faculty Career System has not been introduced yet but is being prepared as part of the HR Award project.

Faculty of Mechanical Engineering

The faculty has not implemented own Career System so far, although its adoption has been debated. The enforceability of its provisions and their often dubious meaning are considered a serious problem. So far, different tools have been used. Every head of department had prepared and updated a career development plan for their department. This document was used to evaluate the work of heads of departments and the departments as such. Many departments used their own staff evaluation systems. The Rector of CTU paid out bonuses to employees based on converted RIV points and number of citations based on data cited in the VVVS component, for which a methodology prepared by the CTU Rector's Office was used.

Faculty of Electrical Engineering

The Faculty of Electrical Engineering had implemented a Career System, thanks to which the number of professors and docents was stable and can be considered satisfactory. The number of fellows has been steadily declining, which was in line with the faculty's long-term plan according to which fellowship should only be a transition period before habilitation. In near future also some more experienced fellows should habilitate or be transferred to positions of lecturers or scientific staff. The position of a senior lecturer was established, which made career promotion possible also in this career line.

Faculty of Nuclear Sciences and Physical Engineering

The faculty does not have own Career System. Employees of FNSPE received bonuses awarded by the dean based on converted RIV points and the number of citations following data cited in the VVVS component. The faculty adopted relevant methodology prepared by the CTU Rector's Office.

Faculty of Architecture

The faculty does not have own Career System so far and the motivation tool for remuneration of employees based on converted RIV points is not included in the methodology for distribution of financial resources.

Faculty of Transportation Sciences

The faculty does not have own Career System so far.

Faculty of Biomedical Engineering

FBME has not prepared own Career System so far, but became involved in the project called Ensuring and Assessment of Quality, an inseparable part of which is a complex assessment of employees (criterion 3). The results of this project can be used as a basis for preparation of a Career System. The faculty has adopted career principles which objectively contribute to the process of career growth of academic staff.

In the long run, the faculty has been trying to create conditions to support the qualification growth of its employees, which would enable them to achieve excellent results in research, creative and educational activities. The faculty also focuses on supporting young and talented workers. It also aims to attract new students, especially in doctoral studies, and increase their interest in working at CTU in Prague. The university has been ever more successful in establishing cooperation with leading practitioners also from abroad.

The faculty gradually fulfils the above mentioned objectives primarily by:

- Requiring a concept of personnel policy from senior managers at all levels,
- Performing regular assessment of all employees and checking the fulfilment of tasks,
- Encouraging the adoption of effective measures to improve the qualification and age structure of academic staff,
- Supporting exceptional workers and creative teams,
- Ensuring high quality of habilitation and appointment procedures and participation of foreign experts in relevant commissions,
- Insisting on and universally supporting international cooperation, cooperation with industry and the involvement of students in research activities,
- Increasing the responsibility of the Subject Area Board in the process of evaluating doctoral studies,
- Gradually reducing the number of academic workers not involved in research projects and activities at their department,
- Increasing the proportion of young high-quality workers with a potential for professional growth and their involvement in scientific, research and other creative activities and international cooperation,
- Searching for talented students in the course of their studies and encouraging them to continue in doctoral studies,
- Improving the qualifications and erudition of administrative and other non-academic staff.

Faculty of Information Technology

The faculty does not have own Career System so far. Bonuses awarded in the middle and at the end of the year are used as a motivation tool; they are distributed on the basis of performance-oriented faculty methodology which takes into account the results of pedagogical and scientific research activities of individual employees registered in the information systems.

Klokner Institute

Employees at KI receive remuneration according to the tables of wage rates at CTU, the motivation tool being remuneration for publishing activities and personal compensation.

Masaryk Institute of Advanced Studies

Since the winter semester of the 2015-2016 academic year, remuneration of academic workers at the Masaryk Institute of Advanced Studies has been governed by special rules.

Institute of Physical Education and Sport

The employees at ÚTVS are remunerated according to the valid CTU wage regulations, personal bonuses and regular quarterly bonuses, or one-off bonuses are used as a motivation tool.

The system takes into account professional breaks. ÚTVS has not issued a Career System for academic staff.

University Centre for Energy Efficient Buildings

The Career System at the University Centre for Energy Efficient Buildings has been in effect since 1 January 2014. The Career and Professional System defines working positions and the relevant requirements and possibilities of further development of employees. The system stipulates qualification degrees of employees at UCEEB, admission of employees and way of termination of their employment at UCEEB. The Career System serves as a tool for personnel planning, its provisions are binding but no right exists to them. A worker's career growth refers to their qualification and functional advancement achieved on the basis of their personal development and enhanced qualifications. A worker's systematic and sustained efforts to enhance their competencies and formal qualifications in the field of their work activities, including training in a wider context related to their profession, functional classification, leadership position, etc., are all prerequisites for a worker's career growth. In principle, due to UCEEB's flat structure, career growth is possible for scientific research workers (research and development assistant, junior researcher, senior researcher). UCEEB is composed of two cooperating teams: a research team, whose aim is to carry out research and development activities in accordance with the established strategy of UCEEB, and a technical-management team, whose aim is the organizational, administrative and operational support of UCEEB activities. In case of other positions, we rather talk about professional growth. The process of employee assessment is an integral part of the process of personnel and career planning; it is compulsory for all employees at UCEEB and takes place twice a year. Individual Career Development Plans are developed based on the assessment results.

The main parts of the Career and Professional System include:

- International experience for all scientific positions,
- Publication activities for all scientific positions,
- Establishing clear responsibility for all positions,
- Preferential treatment of young researchers on parental leave.

An HR specialist that has prepared the employee's Career Development Plan is responsible for registering the career and professional promotion and its supervision. The fulfilment of the Career Development Plan affects the employee's salary and bonuses.

Czech Institute of Informatics, Robotics and Cybernetics

An internal directive was approved by the CTU Academic Senate and the CIIRC Assembly. (It has been effective since 2014 and an amended version was approved by the CTU Academic Senate, which came to force on 19 June 2018.) The Career System for academic staff at CIIRC (they participate in research and related pedagogical activities) defines qualification degrees, conditions and the process of their acquisition. Qualification degrees affect the job title, remuneration and management of CIIRC. Employees are assigned qualification degrees by the director of CIIRC following recommendation of the CIIRC Attestation Commission.

Institute of Experimental and Applied Physics

Institute of Experimental and Applied Physics does not have own Career System.

6.2. Development of pedagogical skills of CTU academic staff

CTU staff and students can acquire pedagogical skills at the Masaryk Institute of Advanced Studies. Also individual faculties take further steps to provide students and junior employees with pedagogical experience.

Faculty of Civil Engineering

A programme under the title University Propedeutics for Doctoral Students is implemented at the Faculty of Civil Engineering and other CTU parts. The programme develops pedagogical skills and didactic knowledge of doctoral students. Newly accepted academic workers are recommended to attend pedagogical and psychological courses at MIAS (for at least one semester) as well as a course in academic writing and publication organized by CTU Rectorate in cooperation with the National Library of Technology. The faculty systematically appoints junior assistants (doctoral students) to teach together with experienced teachers in order to be trained

in contact teaching – from lowest to highest years. At the level of departments, guarantors of subjects communicate with teachers on a regular basis and, in case of junior academic staff and teachers who are full-time doctoral students, pedagogical experience is passed by means of consultations and discussions on teaching methodology. As part of instruction, team work methods are used in some subjects both on the part of the students and on the part of the teachers. The faculty supports organization of lifelong learning courses, specialized courses for the professional public as well as the presentation of the results of scientific work at conferences, which helps increase pedagogical skills of the academic staff.

Faculty of Mechanical Engineering

The faculty participated in centrally organized events. Pedagogical skills were developed in staff from doctoral students to junior employees to heads of departments. For new teachers preparations for practical training courses and lectures were available. Aside from that, inspections were carried out especially of junior staff. An internal competition was used for development of their pedagogical skills to support development projects of academic workers and students in the framework of the CTU Institutional Plan. It also included continuous care for professional development of workers in the form of doctoral studies, habilitations and appointment procedures.

Faculty of Electrical Engineering

The faculty organizes courses of English language for its teachers and other staff. Junior teachers and doctoral students are appointed to teach together with experienced teachers in order to be trained in contact teaching. Inspections are carried out more often in classes taught by junior staff. Their preparation for lessons is checked by more experienced teachers. The student questionnaire is used to monitor and assess feedback from students. Guarantors of subjects (usually experienced professors and docents) prepare their successors, who are actively involved in preparation and instruction under their supervision. Young teachers are supported financially in the framework of the internal competition to support development projects of academic workers.

Faculty of Nuclear Sciences and Physical Engineering

The Faculty of Nuclear Sciences and Physical Engineering strives to help develop pedagogical skills of its staff. Two tools are primarily used for this purpose – assessment of lessons and an internal competition. Apart from that, the best pedagogical workers receive regular bonuses from a dean's fund.

Assessment of lessons:

Assessment of lessons is carried out every semester by means of a student questionnaire via a CTU questionnaire web system. In the questionnaire, students assess the level of classes of individual subjects from their perspective in detail, answer

general questions about the faculty and concerning more general issues or insert other suggestions. The questionnaire thus provides natural feedback that helps to improve the quality of the pedagogical process.

Based on the questionnaire results, the Student Union at the Faculty of Nuclear Sciences and Physical Engineering CTU in Prague presents awards for outstanding pedagogical contribution – the Golden Chalk.

Internal competition:

In line with the FNSPE Institutional Plan 2016–2020 and in line with CTU methodology, part of the developmental financial resources was allocated in the form of internal competitions to support developmental projects of academic workers and students. A competition was announced in the following areas:

1. Support of pedagogical work of academic workers and profiling and innovation of study programmes at the level of subjects/courses.
2. Creative students' work leading to innovation of educational activities.

Faculty of Architecture

In the framework of ESF project CZ.02.2.69/0.0/0.0/16_015/0002382 KA 07, the faculty organized a course for its employees aimed at increasing their competencies and skills intended primarily for teachers at FA CTU. The course started in November 2017 and continued to December 2018.

Faculty of Transportation Sciences

The faculty organized own specialized conferences and seminars and its academic staff had the opportunity to publish papers and actively participate in their organization. The faculty involved its academic staff in expert projects and research activities aimed at the development of their knowledge that was then reflected in the pedagogical process. In addition, the faculty also provided training for its employees, supported the participation of staff in scientific conferences and workshops and sought to acquire advanced instrumentation and software equipment to support the work of academic staff.

Faculty of Biomedical Engineering

Pedagogical workers at FBME attend courses organized by MIAS.

Faculty of Information Technology

The development of pedagogical skills of academic staff is carried out in the form of specialized seminars, language courses, participation in national and international conferences and internships.

Klokner Institute

In order to enhance their pedagogical skills, academic workers at the Klokner Institute can attend language courses and other educational courses, participate in national and international conferences, ICT training, stays abroad and training in publication skills. Promising young workers have the possibility to participate in instruction of subjects in the doctoral study programme under the supervision of experienced colleagues.

Masaryk Institute of Advanced Studies

At MIAS, no development of pedagogical skills of academic workers is implemented.

Institute of Physical Education and Sport

In order to develop their pedagogical skills, academic staff can attend specialized seminars and conferences as well as language and other specialized courses in the field of kinanthropology.

University Centre for Energy Efficient Buildings

Due to the fact that UCEEB does not implement any accredited study programmes, the position of academic workers is regulated by the relevant legal regulations and internal regulations at CTU.

Professional development of employees at UCEEB takes place in accordance with Sections 227 to 235 of the Labour Code. No right exists to individual motivation elements of career growth, unless stipulated otherwise by the law. Career or professional growth is implemented directly by supporting employees that are preparing to submit doctoral or habilitation theses by enabling them to take time off work or go on a specialized study stay abroad, encouraging employees to participate in national and international professional events that help them increase their expertise in the given field, support of systematic training of workers in the field of organization and management of research and of research projects, support of systematic training of employees in the field of management and administration in the form of lifelong learning courses within the framework of internal education and education outside of CTU, support of language education, organization of education in the field of presentation, communication and organizational skills, ICT, etc., creating a background for creative work, in particular by harmonizing and balancing research and pedagogical activities, providing research facilities in accordance with modern trends, encouraging the acquisition of experience through short-term internships in external workplaces.

Czech Institute of Informatics, Robotics and Cybernetics

At CIIRC, no development of pedagogical skills of academic workers is implemented. However, CIIRC is actively involved in the HR Award project implemented at CTU, whose outcomes should define also this area of education.

Institute of Experimental and Applied Physics

At IEAP, no development of pedagogical skills of academic workers is implemented.

6.3. Plan of gender equality

In recruitment of new employees in areas of science, research and education, professional qualities are the only criterion taken into account. In order to eliminate the disadvantages resulting from parenthood, students can use the university school and kindergarten and the management of the university and of the faculties offers help in solving any possible specific cases and needs. CTU ensures compliance with all ethical standards in interpersonal relationships. In this respect, the individual constituent parts implement the following measures:

Faculty of Civil Engineering

Human Resource Management at the FCE responds to the needs of individual departments and workplaces, and in selecting new academic staff and students the faculty is guided by objective assessment of their interest and professional prerequisites for the performance of the given job in the spirit of the Government Strategy for Equality of Women and Men 2016-2020. Many parents make use of the university kindergarten. Out of 24 departments, 3 are headed by women and one woman is a member of the faculty management (Vice-Dean for Education). Students can use two clubrooms – the student club Štuk and a newly created relaxation zone in room 500B (also students-mothers can spend their time there with their children). Last year, a Reading Room for students was opened and recently a FCE Gallery was created, which serves as a meeting place. Three drinking fountains are available free of charge for employees and students. In accordance with the collective contract, employees can have flexible or fixed working hours and they can also work from home following approval by their superior.

Faculty of Mechanical Engineering

In the area of HR management, FME decided not to develop a separate plan of gender equality. However, FME systematically supports gender equality with respect to study applicants. In addition, in a number of projects FME has pledged to enhance gender equality in recruitment of academic workers.

Faculty of Electrical Engineering

FEE has no specific document regulating this area. Only cases of long-term incapacity for work were addressed at the level of individual workplaces. CTU kindergarten Lvíčata is available for all students and employees at CTU. The faculty also has a children's corner.

Faculty of Nuclear Sciences and Physical Engineering

The faculty has no faculty plan of gender equality.

Faculty of Architecture

FA has no specific document regulating this area. Only cases of long-term incapacity for work were addressed at the level of individual workplaces. CTU kindergarten Lvíčata is available to all students and employees at CTU. In 2018, FA started to prepare a room for mothers with children that will be available to employees and female students alike.

Faculty of Transportation Sciences

FTS treats all its employees and students equally regardless of gender. To support the balance of work and family life, employees and students can use the university kindergarten and primary school Lvíčata, in the creation of which FTS played a significant role. In addition, FTS also organizes Children's Academy of Transportation in the summer months - a suburban camp for children of its employees and students, which is part of a suburban camp organized by CTU. In the course of the year it also organizes other sports and social events for its employees. In 2018, it included a sports and social weekend of FTS in Dečín or a social evening with a theatre performance of the play Švestka (Plum).

Faculty of Biomedical Engineering

Although it has no own plan of gender equality, the faculty is committed to promoting the ideas of gender equality in all areas for which it is responsible, both externally and internally. One of the things that proves that gender equality is part of the faculty's life is the fact that women are represented in all faculty bodies and committees. On the other hand, it must also be noted that female students make up over 50% of the student body at the faculty.

Faculty of Information Technology

FITtreats all its employees and students equally regardless of gender. Cases of long-term incapacity for work were addressed individually. CTU kindergarten Lvíčata is available to all students and employees at CTU. CTU also organizes a suburban camp for kids. As in previous years, also in 2018 the faculty held a Children's Day for children of its employees.

Klokner Institute

Parents working at KI are allowed to work part-time and to work flexible working hours. A KI trade union operates the union's cottage in Příchovice in Jizera Mountains, which can be used by KI students and employees.

Masaryk Institute of Advanced Studies

MIAS has no plan of gender equality.

Institute of Physical Education and Sport

ÚTVS has no plan of gender equality.

University Centre for Energy Efficient Buildings

Human Resource Management is based on the principles of gender equality according to the principles established in ERA ROAD MAP - priority no. 4 and the Government Strategy for Equality of Women and Men, which are also reflected in the career system and the process of assessment of employees. All employees have the same rights and obligations as stipulated in the above mentioned documents and in other employment regulations, without any limitations. The employer ensures equal treatment of all employees as regards the conditions of work, remuneration and bonuses, education and possibilities of career growth.

Within employment relationships, any discrimination against employees based on their ethnic or social origin, nationality, gender, property, descent, health, age, marital status or family status or family duties, sexual orientation, language, belief and religion, political or other beliefs, membership or activity in political parties or movements, trade unions and other associations is prohibited. Also such conduct is prohibited that does not discriminate directly but in its consequences.

Czech Institute of Informatics, Robotics and Cybernetics

CIIRC does not have an approved comprehensive plan of gender equality (a so-called Gender Equality Plan – GEP). Nevertheless, it is a member of the Gender Equality Network in the European Research Area and follows the recommendations of the European Institute for Gender Equality. CIIRC has adopted and abides by a strictly gender-sensitive code of conduct and monitors gender statistics, supports work-life balance and representation of women in senior positions. Gender issues are an integral part of project applications developed under the Horizon 2020 programme. In the first stage of the RICAIP project, a strategy and plan of gender equality were set up, which will be implemented in the second stage. CIIRC participates in the preparation of projects explicitly focused on gender equality; for instance, it took part in call H2020-SwafS-09-2018-2019: "Supporting Research Organization to Implement Gender Equality Plans".

Institute of Experimental and Applied Physics

IEAP has no plan of gender equality.

6.4. Sexual and gender-based harassment

Such cases, if they arise, are handled by senior staff at individual constituent parts.

Faculty of Civil Engineering

Based on an initiative of the CTU Rectorate, a trained employee was appointed at the faculty and the CTU methodology for students and employees will be implemented, which stipulates how to respond to suspicion of sexual and gender-based harassment.

Faculty of Mechanical Engineering

Sexual and gender-based harassment is a serious issue that FCE has been monitoring systematically. On the one hand, as a precaution, employees are ensured of oversight by FME and the preparedness to deal with possible cases of harassment; on the other hand, an actual case that happened at FME was solved in cooperation with the Police of the Czech Republic.

Faculty of Electrical Engineering

The faculty has not adopted any specific document governing this area.

Faculty Nuclear Sciences and Physical Engineering

The faculty has not adopted any specific document governing this area.

Faculty of Architecture

The faculty has not adopted any specific document governing this area.

Faculty of Transportation Sciences

The faculty has not adopted any regulations specifically governing this area. This area is regulated by the Labour Code, or by the Code of Ethics. FTS runs a psychological counselling centre for its employees and students, whose services are free of charge and which also offers internet consultancy.

Faculty of Biomedical Engineering

During the entire existence of the faculty, no cases suggesting suspicion of sexual and gender-based harassment have been reported. The faculty's Ethics Committee would promptly solve such grave filing in cooperation with the management of the faculty and of the university.

Faculty of Information Technology

The faculty has not adopted any specific document governing the area of sexual and gender-based harassment. This area is regulated by the Labour Code, or by the Code of Ethics, which FIT considers sufficient.

Klokner Institute

The Klokner Institute has not adopted any special procedure concerning sexual and gender-based harassment. Individual problems are solved individually and in person with senior staff.

Masaryk Institute of Advanced Studies

MIAS has not adopted any specific document governing this area.

Institute of Physical Education and Sport

ÚTVS has not adopted any specific document governing this area.

University Centre for Energy Efficient Buildings

The career system and the process of employee assessment at UCEEB also deal with the issues of sexual and gender-based harassment, with the aim to reveal any negative signs thereof. No one is allowed to take advantage of the exercise of rights and obligations arising from employment relationships to the detriment of another employee or the humiliation of their dignity or the detriment of others. Damage to an employee's dignity also includes sexual conduct that is unwelcome, inappropriate or offensive, or which may be perceived by another employee as a condition that affects the exercise of rights or obligations arising from an employment relationship.

If an employee believes that their rights are impaired, they should contact their direct supervisor or a more senior supervisor or a representative of the HR department and lodge a complaint. The complaint will be reviewed in order to find and implement a solution that complies with the nature of the problem. Employer may not disadvantage or hold the employee liable in any way for the reason that they legitimately claim their rights.

Czech Institute of Informatics, Robotics and Cybernetics

The CIIRC's HR department is the main point of contact and the department responsible for cases of possible discrimination or harassment at the workplace.

Institute of Experimental and Applied Physics

IEAP has not adopted any specific document governing this area.

6.5. Statistics of CTU employees

Tab. 6.1

Total academic and scientific staff and other employees (converted numbers*)											
	Academic staff							Scientific staff**			
	Academic staff TOTAL	Professors	Docents	Fellows	Assistants	Lecturers	Scientific, research and development workers participating in pedag. activities	Postdocs***	Scientific staff outside other categories	Other employees ****	Employees TOTAL
Faculty of Civil Engineering	358	48	104	205	0	1	0	15	50	0	**232**
Number of women	88	4	20	64	0	0	0	5	21	0	**129**
Faculty of Mechanical Engineering	277	31	41	174	24	3	4	0	24	0	**247**
Number of women	29	0	3	21	1	3	1	0	3	0	**90**
Faculty of Electrical Engineering	258	47	65	134	0	12	0	0	155	0	**218**
Number of women	21	2	3	16	0	0	0	0	11	0	**102**
Faculty of Nuclear Sciences and Physical Engineering	138	27	32	78	0	1	0	0	106	0	**111**
Number of women	17	3	0	14	0	0	0	0	27	0	**69**
Faculty of Architecture	112	13	24	75	0	0	0	2	7	0	**65**
Number of women	35	1	5	29	0	0	0	1	2	0	**42**
Faculty of Transportation Sciences	130	11	31	86	2	0	0	1	8	0	**96**
Number of women	40	2	6	31	1	0	0	0	2	0	**51**
Faculty of Biomedical Engineering	93	9	14	22	47	1	0	2	12	0	**39**
Number of women	38	1	3	11	23	0	0	0	2	0	**27**
Faculty of Information Technology	93	4	16	73	0	0	0	5	10	0	**53**
Number of women	13	0	3	10	0	0	0	0	1	0	**28**

Masaryk Institute of Advanced Studies	50	3	11	36	0	0	0	0	1	0	**24**
Number of women	28	2	5	21	0	0	0	0	1	0	**13**
Other institutes at CTU	57	5	3	40	1	0	8	13	214	0	**686**
Number of women at other institutes	10	1	1	8	0	0	0	3	30	0	**407**
TOTAL	**1566**	**198**	**341**	**923**	**74**	**18**	**12**	**38**	**587**	**0**	**1771**
Women total	319	16	49	225	25	3	1	9	100	0	**958**

Note: *Average converted number means the number of all hours worked in the monitored period from 1 January to 31 December (by all employees in monitored categories, including agreements to perform work, not including contracts for work) converted to the total annual working hours of one full-time employee.
Note: **In this case, scientific staff are employees who are not academic staff under Section 70, Act No. 111/1998 Coll., on Higher Education Institutions.
Note: ***An employee of the given research institution or university up to 5 years after the award of the Ph.D. degree or its equivalent. They work as part of a scientific team of the given institution under supervision of experienced scientific workers on a specific task and publish their results independently and as part of the team. They have concluded an employment contract with the research institution for a definite period of time (lasting 1-3 years) for one, maximum three subsequent periods. Their salary is regulated by the rules of the wage system of the given institution, while at the same time they can receive remuneration under research grant projects.
Note: ****Other employees refer to all other workers that do not directly participate in education and research. They include, in particular, administrative, technical and other employees.
The category "other scientific, research and development employees" includes technical and specialized staff that do not directly participate in research, but are indispensable for the research activity (for instance, operators of research facilities). No such employees were employed at CTU in 2018.

Tab. 6.2

Age of academic and scientific workers (number of natural persons*)																				
	Academic staff												Scientific staff **				Other employees****			
	Professors		Docents		Fellows		Assistants		Lecturers		Scientific, research and development workers participating in pedag. activities		Postdocs***		Scientific staff outside other categories					
	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women	TOTAL	Of which women
under 29 yrs	0	0	0	0	35	6	20	4	0	0	0	0	2	0	384	84	264	103	**705**	197
30–39 yrs	2	1	37	3	447	89	64	16	6	0	1	0	40	11	465	97	431	200	**1493**	417
40–49 yrs	30	4	144	13	410	104	17	10	16	1	4	0	1	0	125	20	513	277	**1260**	429
50–59 yrs	52	4	77	19	173	63	8	6	9	1	4	1	0	0	47	5	426	284	**796**	383
60–69 yrs	86	5	94	22	136	57	5	2	5	1	1	0	0	0	36	2	374	197	**737**	286
over 70 yrs	88	7	85	4	40	9	0	0	2	0	5	1	0	0	33	1	161	59	**414**	81
TOTAL	**258**	**21**	**437**	**61**	**1241**	**328**	**114**	**38**	**38**	**3**	**15**	**2**	**43**	**11**	**1090**	**209**	**2169**	**1120**	**5405**	**1793**

Note: * The total number of employees/workers, irrespective of the level of time involved but only in the employment relationship, shall be indicated, not including those working on the DPP and DPC. It does not include other types of contractual relationships under the Civil Code that have the character of buying services.

Note: **In this case, scientific staff are employees who are not academic staff under Section 70, Act No. 111/1998 Coll., on Higher Education Institutions.

Note: ***An employee of the given research institution or university up to 5 years after the award of the Ph.D. degree or its equivalent. They work as part of a scientific team of the given institution under supervision of experienced scientific workers on a specific task and publish their results independently and as part of the team. They have concluded an employment contract with the research institution for a definite period of time (lasting 1-3 years) for one, maximum three subsequent periods. Their salary is regulated by the rules of the wage system of the given institution, while at the same time they can receive remuneration under research grant projects.

Tab. 6.3

Number of academic staff according to work load and highest achieved qualification (number natural persons)												
	Academic staff								Scientific staff **		TOTAL	Women
	Professors		Docents		DrSc., CSc., Dr., Ph.D., Th.D.		Other					
	TOTAL	Women	TOTAL	Women	TOTAL	Women	TOTAL	Women	TOTAL	Women		
Faculty of Civil Engineering												
FTE												
up to 0.3	2	0	12	1	22	3	7	4	32	7	**75**	15
0.31–0.5	6	0	12	3	34	14	29	7	40	18	**121**	42
0.51–0.7	3	1	1	0	5	2	0	0	10	4	**19**	7
0.71–1.0	44	4	99	19	156	44	29	15	48	15	**376**	97
TOTAL	**55**	**5**	**124**	**23**	**217**	**63**	**65**	**26**	**130**	**44**	**591**	**161**
Faculty of Mechanical Engineering												
FTE												
up to 0.3	13	2	10	1	20	4	9	0	18	3	**70**	10
0.31–0.5	5	0	16	2	12	1	9	2	10	1	**52**	6
0.51–0.7	5	0	2	0	10	2	4	1	4	2	**25**	5
0.71–1.0	24	0	31	2	132	14	77	14	20	2	**284**	32
TOTAL	**47**	**2**	**59**	**5**	**174**	**21**	**99**	**17**	**52**	**8**	**431**	**53**
Faculty of Electrical Engineering												
FTE												
up to 0.3	6	1	1	0	22	0	6	1	62	4	**97**	6
0.31–0.5	3	0	7	0	15	3	1	1	89	5	**115**	9
0.51–0.7	5	0	3	0	4	1	7	3	28	2	**47**	6
0.71–1.0	42	2	63	3	105	6	27	9	131	9	**368**	29
TOTAL	**56**	**3**	**74**	**3**	**146**	**10**	**41**	**14**	**310**	**20**	**627**	**50**
Faculty of Nuclear Sciences and Physical Engineering												
FTE												
up to 0.3	4	0	2	0	5	0	3	2	65	15	**79**	17
0.31–0.5	3	0	2	0	7	0	2	1	20	7	**34**	8
0.51–0.7	1	0	4	1	4	1	0	0	0	0	**9**	2
0.71–1.0	24	3	28	0	64	10	13	8	93	26	**222**	47
TOTAL	**32**	**3**	**36**	**1**	**80**	**11**	**18**	**11**	**178**	**48**	**344**	**74**
Faculty of Architecture												
FTE												
up to 0.3	2	0	1	0	7	2	3	1	12	4	**25**	7
0.31–0.5	4	0	8	1	10	3	50	13	6	4	**78**	21
0.51–0.7	1	0	3	1	5	1	7	2	3	2	**19**	6
0.71–1.0	12	1	18	4	19	11	25	12	4	0	**78**	28
TOTAL	**19**	**1**	**30**	**6**	**41**	**17**	**85**	**28**	**25**	**10**	**200**	**62**

Faculty of Transportation Sciences												
FTE												
up to 0.3	5	0	8	1	17	3	15	6	8	3	**53**	13
0.31–0.5	3	1	10	1	12	6	7	2	5	0	**37**	10
0.51–0.7	0	0	4	1	6	0	6	1	1	0	**17**	2
0.71–1.0	8	1	23	5	41	12	35	18	6	3	**113**	39
TOTAL	**16**	**2**	**45**	**8**	**76**	**21**	**63**	**27**	**20**	**6**	**220**	**64**
Faculty of Biochemical Engineering												
FTE												
up to 0.3	6	2	8	2	13	3	17	6	19	8	**63**	21
0.31–0.5	0	0	6	1	5	2	8	5	11	3	**30**	11
0.51–0.7	1	0	0	0	2	1	5	1	1	0	**9**	2
0.71–1.0	8	1	12	2	27	12	37	22	9	0	**93**	37
TOTAL	**15**	**3**	**26**	**5**	**47**	**18**	**67**	**34**	**40**	**11**	**195**	**71**
Faculty of Information Technology												
FTE												
up to 0.3	3	0	2	0	5	0	1	0	17	2	**28**	2
0.31–0.5	1	0	4	0	9	1	9	2	6	1	**29**	4
0.51–0.7	0	0	1	0	9	4	4	1	0	0	**14**	5
0.71–1.0	3	0	13	3	35	4	15	3	16	1	**82**	11
TOTAL	**7**	**0**	**20**	**3**	**58**	**9**	**29**	**6**	**39**	**4**	**153**	**22**
Masaryk Institute of Advanced Studies												
FTE												
up to 0.3	0	0	5	1	3	0	0	0	1	0	**9**	1
0.31–0.5	2	0	5	2	11	8	3	2	0	0	**21**	12
0.51–0.7	0	0	0	0	0	0	0	0	0	0	**0**	0
0.71–1.0	2	2	7	3	23	10	7	6	2	1	**41**	22
TOTAL	**4**	**2**	**17**	**6**	**37**	**18**	**10**	**8**	**3**	**1**	**71**	**35**
Other institutes												
FTE												
up to 0.3	1	0	0	0	1	0	0	0	60	18	**62**	18
0.31–0.5	0	0	1	0	7	2	0	0	57	12	**65**	14
0.51–0.7	0	0	0	0	2	0	0	0	13	4	**15**	4
0.71–1.0	6	0	5	1	19	4	26	6	206	34	**262**	45
TOTAL	**7**	**0**	**6**	**1**	**29**	**6**	**26**	**6**	**336**	**68**	**404**	**81**

Czech Technical University												
FTE												
up to 0.3	42	5	49	6	115	15	61	20	294	64	**561**	110
0.31–0.5	27	1	71	10	122	40	118	35	244	51	**582**	137
0.51–0.7	16	1	18	3	47	12	33	9	60	14	**174**	39
0.71–1.0	173	14	299	42	621	127	291	113	535	91	**1919**	387
TOTAL	**258**	**21**	**437**	**61**	**905**	**194**	**503**	**177**	**1133**	**220**	**3236**	**673**

Note: Only the highest academic degree is given.

Note: *In this case, scientific staff are employees who are not academic staff under Section 70, Act No. 111/1998 Coll., on Higher Education Institutions.

Tab. 6.4

Management (natural persons)									
	Rector/Dean	**Vice-Rector/Vice-Dean**	**Academic Senate**	**Scientific/Artistic/Academic Board**	**Registrar/Secretary***	**Board of Directors**	**Head of institute, university agricultural or forestry farm**	**Head of department/institute/research centre**	**TOTAL ******
Faculty of Civil Engineering	2	6	3	5	1		0	27	**44**
Of which women	1	2	0	0	0		0	3	**6**
Faculty of Mechanical Engineering	1	3	3	3	1		0	18	**29**
Of which women	0	0	0	0	0		0	1	**1**
Faculty of Electrical Engineering	1	7	3	2	1		0	18	**32**
Of which women	0	0	1	0	0		0	1	**2**
Faculty of Nuclear Sciences and Physical Engineering	1	4	3	2	1		0	10	**21**
Of which women	0	0	0	0	0		0	1	**1**
Faculty of Architecture	1	5	3	3	1		0	17	**30**
Of which women	0	2	0	0	1		0	3	**6**
Faculty of Transportation Sciences	1	5	3	3	1		0	11	**24**
Of which women	0	1	0	0	0		0	1	**2**
Faculty of Biochemical Engineering	1	4	3	3	1		0	6	**18**
Of which women	0	0	2	1	0		0	1	**4**
Faculty of Information Technology	1	1	3	2	1		0	6	**14**
Of which women	0	0	0	0	0		0	1	**1**
Other institutes	1	9	3	0	9		10	12	**44**
Of which women	0	2	0	0	2		0	2	**6**
TOTAL	**10**	**44**	**27**	**23**	**17**	**0**	**10**	**125**	**256**
Of which women	1	7	3	1	3	0	0	14	**29**

Note: *Pursuant to the Higher Education Act, Section 25, Article 2.
Note: **The total number does not have to correspond with the total number of natural persons (one person can hold multiple positions within the university or faculty), it is a simple sum of the previous lines.

Tab. 6.5

Academic staff* with foreign citizenship (average converted numbers****)									
	Academic staff						Scientific staff **		
	Professors	Docents	Fellows	Assistants	Lecturers	Scientific, research and development workers participating in pedag. activities	Postdocs***	Scientific staff outside other categories	Other staff***
Faculty of Civil Engineering	**0,56**	**0,5**	**2,48**	**0**	**0**	**0**	**0**	**0,76**	**2,57**
Germany	0	0	0	0	0	0	0	0	0
Poland	0	0	0	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0	0	0
Slovakia	0,56	0,5	0,48	0	0	0	0	0,76	2,57
Other EU member states	0	0	0	0	0	0	0	0	0
Other states outside the EU	0		2	0	0	0	0	0	0
Of which women total (regardless of citizenship)	0	0	0	0	0	0	0	0	0
Faculty of Mechanical Engineering	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**2,68**	**6,54**
Germany	0	0	0	0	0	0	0	0	0
Poland	0	0	0	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0	0	0
Slovakia	1	0	3	0	0	0	0	1,49	2,55
Other EU member states	0	0	2	0	0	0	0	1,19	3,99
Other states outside the EU	0	0	0	0	0	0	0		0
Of which women total (regardless of citizenship)	0	0	1	0	0	0	0	1,7	2,15

Faculty of Electrical Engineering	**1**	**1**	**13,31**	**0**	**0**	**0**	**0**	**38,69**	**3,53**
Germany	0	0	1	0	0	0	0	1,5	0
Poland	0	0	1	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0	0	0
Slovakia	1	1	3,31	0	0	0	0	8,01	3,53
Other EU member states	0	0	5,15	0	0	0	0	9,3	0
Other states outside the EU	0	0	2,85	0	0	0	0	19,88	0
Of which women total (regardless of citizenship)	0	0	1	0	0	0	0	4,3	0
Faculty of Nuclear Sciences and Physical Engineering	**1,74**	**0**	**4,87**	**0,33**	**0,08**	**0**	**0**	**27,25**	**1,11**
Germany	0	0	0	0	0	0	0	1,04	0
Poland	0	0	0	0	0	0	0	1,01	0,25
Austria	0	0	0	0	0	0	0	0	0,05
Slovakia	0,74	0	3	0	0,08	0	0	12,39	0,39
Other EU member states	0	0	1,87	0,33	0	0	0	2,84	0,07
Other states outside the EU	1	0	0	0	0	0	0	9,97	0,35
Of which women total (regardless of citizenship)	0	0	0,33	0,33	0	0	0	5,89	0,39
Faculty of Architecture	**1,5**	**1,07**	**3,6**	**0**	**0**	**0**	**0,26**	**0**	**1,94**
Germany	0	0	0	0	0	0	0	0	0,14
Poland	0	0	0	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0,02	0	0
Slovakia	1	0	0,6	0	0	0	0,24	0	1,42
Other EU member states	0,5	1,07	1,5	0	0	0	0	0	0,34
Other states outside the EU	0	0	1,5	0	0	0	0	0	0,04
Of which women total (regardless of citizenship)	0	0	0,5	0	0	0	0,26	0	1,72
Faculty of Transportation Sciences	**0**	**1,55**	**5,44**	**0,1**	**0**	**0**	**0**	**0,42**	**0,49**
Germany	0	0	0	0	0	0	0	0	0
Poland	0	0	1,58	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0	0	0
Slovakia	0	1,55	3,15	0,1	0	0	0	0,33	0,2
Other EU member states	0	0	0,19	0	0	0	0	0	0
Other states outside the EU	0	0	0,52	0	0	0	0	0,09	0,29
Of which women total (regardless of citizenship)	0	1	0,5	0	0	0	0	0	0

Faculty of Biomedical Engineering	**1**	**1,1**	**2,66**	**2,43**	**0**	**0**	**0**	**0,33**	**0,83**
Germany	0	0	0	0	0	0	0	0	0,38
Poland	0	0	0	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0	0	0
Slovakia	1	1,1	0,66	0,5	0	0	0	0,15	0
Other EU member states	0	0	0	0	0	0	0	0,03	0,1
Other states outside the EU	0	0	2	1,93	0	0	0	0,15	0,35
Of which women total (regardless of citizenship)	0	0	2,66	1,43	0	0	0	0,18	0,35
Faculty of Information Technology	**0,42**	**0,5**	**6,7**	**0**	**0**	**0**	**2**	**5,6**	**2,88**
Germany	0	0	0	0	0	0	0	0	0
Poland	0	0	0	0	0	0	2	0,85	0
Austria	0	0,5	0	0	0	0	0	0	0
Slovakia	0,42	0	2,85	0	0	0	0	0,7	1,71
Other EU member states	0	0	2,15	0	0	0	0	0	0
Other states outside the EU	0	0	1,7	0	0	0	0	4,05	1,17
Of which women total (regardless of citizenship)	0	0	2,45	0	0	0	0	0	0,75
Other institutes	**0,2**	**2**	**2,55**	**0,36**	**1**	**0**	**2**	**46,83**	**28,99**
Germany	0	0	0	0	1	0	0	3,83	0,25
Poland	0	0	1	0	0	0	0	2,82	0,42
Austria	0	0	0	0	0	0	0	0	0
Slovakia	0	0	1,55	0,36	0	0	0	11,42	10,74
Other EU member states	0,2	2	0	0	0	0	1	9	1,87
Other states outside the EU	0	0	0	0	0	0	1	19,76	15,71
Of which women total (regardless of citizenship)	0	0,29	2,75	0	0	0	0	12,09	14,49
TOTAL	**7,42**	**7,72**	**46,61**	**3,22**	**1,08**	**0**	**4,26**	**122,56**	**48,88**
Germany	0	0	1	0	1	0	0	6,37	0,77
Poland	0	0	3,58	0	0	0	2	4,68	0,67
Austria	0	0,5	0	0	0	0	0,02	0	0,05
Slovakia	5,72	4,15	18,6	0,96	0,08	0	0,24	35,25	23,11
Other EU member states	0,7	3,07	12,86	0,33	0	0	1	22,36	6,37
Other states outside the EU	1	0	10,57	1,93	0	0	1	53,9	17,91
Of which women total (regardless of citizenship)	0	1,29	11,19	1,76	0	0	0,26	24,16	19,85

Note: * In this case, scientific staff are employees who are not academic staff under Section 70, Act No. 111/1998 Coll., on Higher Education Institutions.
Note: ** An employee of the given research institution or university up to 5 years after the award of the Ph.D. degree or its equivalent. They work as part of a scientific team of the given institution under supervision of experienced scientific workers on a specific task and publish their results independently and as part of the team. They have concluded an employment contract with the research institution for a definite period of time (lasting 1-3 years) for one, maximum three subsequent periods. Their salary is regulated by the rules of the wage system of the given institution, while at the same time they can receive remuneration under research grant projects.
Note: *** Other employees refer to all other workers that do not directly participate in education and research. They include, in particular, administrative, technical and other employees.
Note: **** Average converted number means the number of all hours worked in the monitored period from 1 January to 31 December by all employees (in monitored categories, including agreements to perform work, not including contracts for work) converted to the total annual working hours of one full-time employee.
The category "other scientific, research and development employees" includes technical and specialized staff that do not directly participate in research, but are indispensable for the research activity (for instance, operators of research facilities). No such employees were employed at CTU in 2018.

Tab. 6.6

Newly appointed docents and professors (number)				
	Number			Average age of newly appointed persons***
	At CTU*		Permanent employees appointed at another university**	
	Total	Of which permanent employees at CTU		
Faculty of Civil Engineering				
Professors appointed in 2018	4	4	0	46
Of which women	1	1	0	38
Docents appointed in 2018	9	9	0	46
Of which women	2	2	0	55
Faculty of Mechanical Engineering				
Professors appointed in 2018	0	0	0	0
Of which women	0	0	0	0
Docents appointed in 2018	4	2	0	54
Of which women	1	1	0	40
Faculty of Electrical Engineering				
Professors appointed in 2018	3	3	0	44
Of which women	0	0	0	0
Docents appointed in 2018	1	1	0	37
Of which women	0	0	0	0

Faculty of Nuclear Sciences and Physical Engineering				
Professors appointed in 2018	2	2	0	45
Of which women	0	0	0	0
Docents appointed in 2018	5	4	0	43
Of which women	1	0	0	46
Faculty of Architecture				
Professors appointed in 2018	1	1	0	51
Of which women	0	0	0	0
Docents appointed in 2018	3	3	0	53
Of which women	0	0	0	0
Faculty of Transportation Sciences				
Professors appointed in 2018	0	0	0	0
Of which women	0	0	0	0
Docents appointed in 2018	5	4	0	38
Of which women	0	0	0	0
Faculty of Biomedical Engineering				
Professors appointed in 2018	1	0	0	46
Of which women	0	0	0	0
Docents appointed in 2018	1	1	0	36
Of which women	0	0	0	0
Faculty of Information Technology				
Professors appointed in 2018	1	1	0	60
Of which women	0	0	0	0
Docents appointed in 2018	0	0	0	0
Of which women	0	0	0	0
Professors appointed in 2018 TOTAL	**12**	**11**	**0**	**47**
Of which women	1	1	0	38
Docents appointed in 2018 TOTAL	**28**	**24**	**0**	**47**
Of which women	4	3	0	49

Note: *The table includes all habilitations and appointments that took place at the given university in the given year, regardless of whether the newly appointed docents and professors were permanent employees of the given university.
Note: **Number of docents and professors that are permanent employees of the given university, but were appointed at another university.
Note: ***The average age is calculated from the total number of newly appointed docents and professors at the given university (faculty or total number).


CZECH INSTITUTE
OF INFORMATICS
ROBOTICS AND
CYBERNETICS
CTU IN PRAGUE

7. Internationalization

7.1. Support for students' participation in international mobility programmes

CTU considers participation of its students in international mobility programmes an important part of their studies. Support to students in this area stems from a CTU Long-Term Plan priority – "Financial Support for Long-term Student Stays Abroad" and is reflected in several ways, primarily through the Erasmus+ programme, the university IP project "Student Mobility" and several other minor projects also focused on student mobility. Also indirect support is important, together with the system of study devised so that teachers and administrative staff can accommodate the needs of students travelling abroad and their stay abroad could be smoothly incorporated into their studies. International study stays are also organized as part of students' research activity in the framework of grant projects within the Student Grant Competition and grant projects of external providers.

7.1.1. Erasmus+ programme

The Erasmus+ programme was a major international cooperation programme and support tool for mobility in 2018. This EU programme allows the participating institutions to organize student exchange based on bilateral agreements between the institutions at bachelor, master and doctoral level. Students can study or do an internship abroad, academic staff can make visits and teach abroad, and non-academic

staff can improve their knowledge in their respective fields abroad, shadow a counterpart, or participate in specialized workshops organized by partner institutions

In the 2017-2018 academic year, CTU in Prague concluded a total of 607 bilateral agreements with 318 foreign universities in 30 countries under the Erasmus+ programme, with the overall capacity of 1,359 outgoing and 1,350 incoming students. However, only 20% of the bilateral agreements were used to organize student stays abroad and 40% were used for incoming students.

In the 2017-2018 academic year, a total of 710 applications were submitted. Based on the applications and a subsequent selection procedure, a total of 365 students were nominated to study abroad. A relatively high number of trips abroad were cancelled in the period between nomination and the planned date of departure (25% of cancelled trips).

Under the programme, 413 CTU students studied at partner universities in 2018, primarily in Germany (75), Spain (36), the UK (35), Sweden (33), France (30) and Belgium (30). As usually, the majority of outgoing students were from the Faculty of Civil Engineering and the Faculty of Architecture.

A total of 30 CTU academic workers visited partner institutions to teach there, primarily in Poland, France and Bulgaria. Thirteen academic staff and administrative staff at CTU participated in training sessions at partner universities, primarily in Spain, Croatia, Slovakia, Portugal, Greece, the UK and Cyprus.

In the 2017-2018 19 academic year, CTU used up all the allocated EU funds: student mobility €453,306, staff mobility €15,831, organization of mobility €53,213. In the 2017-2018 academic year, the co-financing received from the state budget, in particular the international cooperation contribution, totalled €232,014. In total, student grants and staff mobility grants amounted to €701,151.

In 2018, a total of 692 incoming students studied at CTU under the Erasmus+ programme coming in the 2017-2018 and 2018/2019 academic years. The largest numbers came from France (184), Spain (115) and Germany (76). The majority of incoming students were registered at the Faculty of Civil Engineering (160), Faculty of Mechanical Engineering (128), Faculty of Electrical Engineering (130), Faculty of Architecture (98) and Faculty of Information Technology (91).

7.1.2. "Student Mobility" IP project

This annual project is the continuation of a time-proven model of sending students to partner universities abroad based on bilateral agreements on student exchange, primarily outside Europe. The project consists in selecting students including language tests for one- or two-semester stays at universities abroad, granting of scholarships, ensuring their stay of their stay and final evaluation of acquired study results. The project is intended for students of all faculties including those studying for a double degree.

In 2018, a total of 198 outgoing students studied under the project for a total of 871 student-months and a total of 367 incoming students studied at CTU for a total of 1,468 student-months.

The outgoing students are mostly interested in studying in the US (7 universities, 37 students), Taiwan (67universities, 40 students) and South Korea (8 universities, 16 students). Other counties included Australia (14), Mexico (13), Singapore (10), Hong Kong (10), Canada (9), Costa Rica (9) and Japan (8). Students also went to study in Argentina (8), Peru (4), Russia (4), China (3), India (2) and South Africa (2).

A total of 24 students went to study for a double degree at partner universities in Germany, France, Indonesia, Russian and Taiwan.

As mutual bilateral relations are always based on reciprocity, most incoming students also come from the USA (59), South Korea (55) and Taiwan (46). Many incoming students (outnumbering outgoing students) also come from China (35), Mexico (40), Canada (27), Russia (22), Singapore (20) and India (13). Students also came from Australia (11), Argentina (6), Chile (6), Brazil (5), Peru (5) and New Zealand (5).

It must be underlined that all received funds (totalling CZK 11,483,000 in 2018) are always fully used exclusively for scholarships for outgoing students and are never used for salaries, bonuses for the implementation team, material items or any other related services. This is a university project, coordinated by the Department of International Affairs at the CTU Rectorate; nevertheless, the benefits (students' scholarships) are transferred to students of the involved faculties.

7.1.3. ATHENS programme

As every year, CTU in cooperation with UCT was actively involved in the ATHENS programme. Two sessions of week-long exchange programmes were again organized, in March and in November 2018, in universities abroad. In March, 105 students (80 CTU + 25 UCT) travelled abroad to participate in 32 courses (France 8 courses, Spain 6, Italy 5, the Netherlands 3, Portugal 2, Belgium 2, Norway 2, Turkey 1, Austria 1, Germany 1, Greece 1). A total of 128 students participated in the November session (100 CTU + 28 UCT) and participated in 39 one-week courses (France 15 courses, Italy 6, Spain 4, Portugal 3, Belgium 3, Germany 2, Romania 2, Poland 1, Hungary 1, Turkey 1, the Netherlands 1).

7.1.4. Further support of student mobility

CTU also supports short-term stays of students, including doctoral students, abroad, primarily in order to participate in selected international scientific conferences. This is conditioned on an active participation in the given event and by other activities of the outgoing students on behalf of CTU, primarily preparation of new projects or future bilateral contractual cooperation, presentation of the university, etc.

In 2018, a total of 132 students, participants in a number of international sport games and specialized competitions were supported by a total of CZK 1,314,000.

7.2. Integration of foreign academic staff in the life at CTU

Deepening of the internationalization of the life at the university and the enhancement of the quality of the educational process is also affected by the presence of foreign academic workers at the individual faculties. Based on the existing agreements on cooperation with partner institutions abroad and based on the requirements of individual faculties, the university reaches out to foreign colleagues and invites them to teaching stays as part of standard classes at CTU for bachelor, master and doctoral study programmes. The funding for these teaching stays is provided by the "Staff Mobility" IP project, which has been for over five years now a standard part of the activities aimed at further deepening of the internationalization of the life at CTU. The project stems from a CTU Long-Term Plan priority – "Enhancing the Number of Foreign Teachers" and its main part focuses on the organization of the arrival of foreign teachers, their stay at CTU and covering reasonable costs of stay.

The said project represents a beginning of a permanent involvement of foreign teachers in teaching of selected fields of study as part of the educational process at CTU. The involvement of foreign experts will enhance the attractiveness of CTU and may result in an increased interest on the part of self-funding students at individual faculties, which in turn will bring additional financial resources.

Tab. 7.1

CTU involvement in international cooperation programmes (regardless of the source of funding)				
	HORIZON 2020/7th EC framework programme		Others	TOTAL
	TOTAL	Of which Marie-Curie Actions		
Number of projects*	60	3	70	**133**
Number of outgoing students**	0	0	478	**478**
Number of incoming students ***	4	4	1254	**1262**
Number of outgoing academic staff ****	160	0	1280	**1440**
Number of incoming academic staff *****	4	0	355	**359**
Grants in thousands of CZK*****	**228**	**7**	**3 437**	**3672**

Note: *Projects in progress in the given year.
Note: **Outgoing students (i.e. number of departures) – students who studied abroad in 2018; students whose stay had started in 2017 are also included. Only students whose stay exceeded 4 weeks (28 days) are included. If the university includes also stays that lasted a different number of days, it shall state this fact in notes to the table.
Note: ***Incoming students (i.e. number of arrivals) – students who studied in CR in 2018; students whose stay had started in 2017 are also included. Only students whose stay exceeded 4 weeks (28 days) are included.
Note: ****Outgoing academic staff (i.e. number of departures) – academics who worked abroad in 2018; academics whose stay had started in 2017 are also included.

Note: *****Incoming academic staff (i.e. number of arrivals) – academics who worked in CR in 2018; academics whose stay had started in 2017 are also included.
Note: ******The given amounts represent overall financial resources of the projects, including co-financing from the Ministry of Education, Youth and Sports.

Tab. 7.2

Mobility of students, academic and other staff according to countries*****(regardless of source of financing)								
Country	Number of outgoing students *		**Number of incoming students ** **	**Number of outgoing academic staff *** **	**Number of incoming academic staff **** **	**Number of outgoing other staff*** **	**Number of incoming other staff**** **	**Total per country**
	Total	**Of which practical training****** **						
Afghanistan	0	0	2	0	0	0	0	**2**
Albania	0	0	4	1	2	0	0	**7**
Algiers	1	1	1	1	2	0	0	**5**
Angola	0	0	5	0	0	0	0	**5**
Argentina	8	1	13	4	5	1	1	**32**
Armenia	0	0	4	1	0	0	0	**5**
Australia	15	3	12	6	7	1	1	**42**
Azerbaijan	1	0	22	1	4	1	1	**30**
Bangladesh	0	0	2	0	0	0	0	**2**
Belgium	32	5	39	44	45	4	0	**164**
Belarus	2	0	82	2	2	2	2	**92**
Bolivia	2	0	2	2	0	1	0	**7**
Bosnia and Hercegovina	0	0	16	2	3	2	0	**23**
Brazil	10	5	35	4	4	3	0	**56**
Bulgaria	1	1	10	5	4	2	2	**24**
Macedonia	2	0	2	4	3	1	1	**13**
Chad	0	0	1	0	0	0	0	**1**
Montenegro	2	0	5	2	2	0	1	**12**
China (PRC)	17	4	52	158	104	24	5	**360**
Taiwan	63	6	62	40	48	42	2	**257**
Denmark	18	4	6	8	11	5	2	**50**
Dominican Republic	2	0	0	0	0	0	0	**2**
Egypt	1	0	15	2	0	0	1	**19**
Ecuador	0	0	1	1	1	0	0	**3**
Estonia	2	1	6	1	4	2	0	**15**
Philippines	0	0	4	2	0	0	0	**6**
Finland	23	7	44	4	5	3	4	**83**
France	42	12	131	214	315	18	12	**732**

Grenada	0	0	1	0	0	0	0	**1**
Gruzie	0	0	4	1	2	2	0	**9**
Guinea	0	0	1	0	0	0	0	**1**
Chile	2	0	7	2	2	0	0	**13**
Croatia	1	0	4	7	5	4	4	**25**
India	2	0	170	2	2	1	1	**178**
Indonesia	8	2	2	1	1	1	1	**14**
Iraq	0	0	7	0	0	0	0	**7**
Iran	0	0	2	0	2	0	2	**6**
Ireland	3	1	2	2	2	2	1	**12**
Iceland	2	0	4	2	2	0	0	**10**
Italy	23	11	21	8	5	2	0	**59**
Jamaica	0	0	0	0	0	0	0	**0**
Japan	8	4	3	42	47	2	2	**104**
South Africa	2	0	1	0	0	0	0	**3**
Jordan	0	0	5	0	0	0	0	**5**
Cambodia	0	0	2	0	0	0	0	**2**
Kameron	0	0	2	0	0	0	0	**2**
Canada	9	4	9	25	81	6	0	**130**
Columbia	0	0	7	2	4	2	2	**17**
Democratic People's Republic of Korea	0	0	1	0	0	0	0	**1**
Korea	25	5	23	7	4	2	1	**62**
Kosovo	0	0	4	0	0	0	0	**4**
Costa Rica	10	2	0	0	0	0	0	**10**
Saudi Arabia	0	0	4	1	0	0	0	**5**
Cuba	0	0	1	0	0	0	0	**1**
Kyrgyzstan	0	0	15	0	0	0	0	**15**
Lebanon	0	0	5	0	0	1	0	**6**
Libya	0	0	1	0	0	0	0	**1**
Lichtenstein	2	1	2	2	2	1	2	**11**
Lithuania	6	2	6	2	1	1	1	**17**
Latvia	1	0	4	1	1	1	1	**9**
Hungary	4	1	4	4	1	2	3	**18**
Malaysia	0	0	6	2	0	0	0	**8**
Malta	1	0	2	1	1	1	1	**7**
Morocco	0	0	8	1	0	0	1	**10**
Mauritania	0	0	1	0	0	0	0	**1**
Bolivia	2	0	1	1	1	0	0	**5**
Moldova	0	0	15	0	0	0	0	**15**
Mongolia	0	0	4	0	0	0	0	**4**
Namibia	0	0	1	0	0	0	0	**1**
Nepl	0	0	1	0	0	0	0	**1**
Nigeria	0	0	3	0	0	0	0	**3**
Netherlands	32	8	22	43	18	8	5	**128**
Norway	8	2	7	4	2	2	2	**25**
New Zealand	4	0	4	1	0	0	0	**9**

Pakistan	0	0	9	0	0	0	0	**9**
Palestinian Autonomous Territories	0	0	4	0	0	0	0	**4**
Panama	0	0	1	0	0	0	0	**1**
Paraguay	0	0	2	0	0	0	0	**2**
Peru	3	0	7	1	1	0	0	**12**
Poland	3	1	24	72	121	4	0	**224**
Portugal	29	4	15	11	22	4	6	**87**
Austria	12	2	7	5	5	2	5	**36**
Kazakhstan	2	1	148	5	3	2	2	**162**
Tadzhikistan	0	0	2	0	0	0	0	**2**
Uzbekistan	0	0	12	1	1	1	1	**16**
Romania	1	0	12	2	0	1	1	**17**
Russian Federation	14	4	608	114	122	1	21	**880**
Greece	2	0	23	4	2	1	1	**33**
Senegal	0	0	1	0	0	0	0	**1**
Singapur	10	4	14	4	5	0	0	**33**
Slovakia	15	2	1070	134	325	8	11	**1563**
Slovenia	22	4	10	4	5	2	2	**45**
UK	41	8	15	141	129	17	18	**361**
USA	58	8	29	42	36	37	11	**213**
Mexico	12	4	18	7	5	4	2	**48**
Germany	91	21	97	321	311	11	15	**846**
Serbia	1	0	13	4	6	0	2	**26**
Eritrea	0	0	2	0	0	0	0	**2**
Israel	1	0	5	15	18	47	4	**90**
Sudan	0	0	1	0	0	0	0	**1**
Syria	0	0	12	2	2	0	0	**16**
Spain	39	5	99	91	145	4	14	**392**
Sri Lanka	0	0	2	0	0	0	0	**2**
Sweden	34		45	25	21	34	5	**164**
Switzerland	19	8	5	5	4	2	2	**37**
Tanzania	0	0	2	0	0	0	0	**2**
Thailand	3	0	3	0	0	0	0	**6**
Tunis	0	0	4	1	1	0	0	**6**
Turkey	1	0	42	7	7	2	5	**64**
Turkmenistan	0	0	1	0	0	0	0	**1**
Ukraine	4	2	360	7	13	12	8	**404**
Uruguay	1	0	1	0	0	0	0	**2**
Vietnam	1	0	17	4	7	1	4	**34**
Hong Kong	2	0	5	1	1	1	1	**11**
Macao	1	0	1	0	0	0	0	**2**
Other countries	0	0	0	0	0	0	0	**0**
TOTAL	**821**	**171**	**3725**	**1703**	**2075**	**351**	**206**	**8881**

Tab. 7.3

Graduate mobility (percentage of studies)				
	Bachelor study programmes	**Follow-up master study programmes**	**Doctoral study programmes**	**TOTAL**
Faculty of Civil Engineering				
Percentage of graduates who went abroad for at least 14 days during their studies [%]	2	9	0	**2,75**
Percentage of Ph.D. graduates who went abroad for at least 1 month (i.e. 30 days) during their studies [%]			0	**0**
Faculty of Mechanical Engineering				
Percentage of graduates who went abroad for at least 14 days during their studies [%]	0	2	0	**0,5**
Percentage of Ph.D. graduates who went abroad for at least 1 month (i.e. 30 days) during their studies [%]			0	**0**
Faculty of Architecture				
Percentage of graduates who went abroad for at least 14 days during their studies [%]	0	16	0	**4**
Percentage of Ph.D. graduates who went abroad for at least 1 month (i.e. 30 days) during their studies [%]			0	**0**
Masaryk Institute of Advanced Studies				
Percentage of graduates who went abroad for at least 14 days during their studies [%]	1	1	0	**0,5**
Percentage of Ph.D. graduates who went abroad for at least 1 month (i.e. 30 days) during their studies [%]			0	**0**
TOTAL	**3**	**28**	**0**	**7,75**


25 ml
QUALICOLOR ®
ČSN
A
100 ml
Ex + 15s
20 °C
± 0,08 ml

8. Research, development, artistic and other creative activities

8.1. Connecting creative activities and the educational process

In the field of research, development, artistic and other creative activities, CTU relies on its faculties and research centres. Their mutual cooperation and achived results represent the overall results of CTU. Our scientists usually also teach classes and use the latest knowledge in instruction. See below for detailed description of activities taken by individual faculties.

The development of scientific staff at **the Faculty of Civil Engineering** is linked to higher quality education of undergraduate, graduate and doctoral students, and to the professional development of all scientific teaching staff. Support for doctoral studies is provided by involving doctoral students more fully in prestigious and successful teams and in ongoing projects. In addition, there was financial motivation for their work (through part-time employment in research projects and special-purpose scholarships) and more possibilites for students to study abroad in the framework of scientific cooperation were offered. The support provided for doctoral students through the Student Grant Competition is of great significance, as it ensures creative conditions for theoretical and applied research through targeted support for specific research. With respect to connecting educational activities and scientific research, the faculty is involved in the University Centre for Energy Efficient Buildings (UCEEB) – a CTU research

centre. Thanks to this cooperation, researchers and doctoral students are involved in joint research projects, using cutting edge scientific experimental facilities at UCEEB. Connecting creative and educational activities is also reflected in including newly acquired knowledge in lectures and practical training. Participation of students in research activities at individual departments and workplaces is also supported by the system of student scientific staff and direct involvement of students in bachelor and master study programmes in research projects. Students have an opportunity to participate in competitions organized by individual departments (Rektorys's, Bažant's, Vyčichlo's competition) and in a Student Scientific Expert Work (SVOČ)competition in various disciplines, where they can compete with students from all over the Czech Republic. Our faculty has historically always scored very well in this competition.

The Faculty of Mechanical Engineering also supports research activities at European and national levels (projects within Horizon 2020, TAČR, OP VVV projects, several accepted projects under OP PIK Aplikace, MPO Trion, two NPU projects, broad contractual research, etc.), which helps maintain a team of sufficiently qualified academic workers at the faculty. At the same time, this fact allows to create relevantly and well equipped laboratories available for student projects. These activities would not be manageable without intense involvement of the majority of doctoral students and a part of master and bachelor students. In the framework of compulsory student projects, student internships in industrial enterprises were supported based on long-term good experience with the Master of Automotive Engineering international programme, under which a whole semester is dedicated to industrial projects or research focusing on the completion of master theses. On the other hand, partners from industry also participated in block lessons of practical subjects (usually engineering subjects), followed by practical projects. A new programme under the title Industry 4.0 has been accredited in order to offer continuously improved qualification. As part of cooperation under the 7th and 8th framework programme (Horizon 2020) of the European Commission, the faculty's departments and their staff were involved in EU projects in the framework of the ending FP7 (IMPROVE, DynaMill, INTEFIX, MacSheep) and Horizon 2020 (REWARD, GasOn, IMPERIUM, FLEXITURBINE) programmes in 2018. Apart from ensuring technology transfer, contractual research may also result in creating contacts with potential employers for new graduates. Both goals were achieved through cooperation with the application sector. Every year in April, the Faculty of Mechanical Engineering organizes in cooperation with companies a faculty round of the Students Scientific Work, in which students in bachelor, master as well as doctoral study programmes take part. The SAE student formula project under the title CTU CarTech is one of the major engineering projects at FME. Under this project, students present their technical solutions at international competitions.

The Faculty of Electrical Engineering provides first-class education in the field of electrical engineering and information science, electronics, telecommunications, automatic control systems, cybernetics, robotics and computer engineering and power engineering. All study programmes are closely connected to research activities. One-semester projects and theses are usually part of research or development projects, in which students, researchers and teachers are involved. As part of its doctoral study programme, the faculty cooperated closely with institutes of the Czech Academy of

Sciences, which ran accredited doctoral programmes together with FEE, and also with other institutions (e.g. medical faculties and university hospitals), where doctoral students carried out their experimental projects. The number of professional relationships with the state administration and the industrial sector increased significantly.

Th**e Faculty of Nuclear Sciences and Physical Engineering** considers research, development and creative activities and educational activities an inseparable part of a successful development of the faculty. Academic staff as well as outside experts who are involved in teaching at the faculty regularly inform students about the latest results and experience from research, development and creative activities. Consequently, students use these results and information in their seminar, bachelor and master projects. Students are involved in research as part of projects under the Student Grant Competition (SGS) as well as implementation of projects by GAČR and other providers. At the same time, subjects of theses are defined so that they reflect current research topics in the given field and in this way correspond to the issues studied by academic workers at FNSPE as part of their research and development activities. FNSPE coordinates the activities of the Centre of Advanced Applied Sciences (CAAS), where researchers and students at six faculties of CTU work on joint projects.

The Faculty of Transportation Sciences implements project-oriented instruction, in which external experts from the field of road, rail and air transport and IT-telecoms sector are involved. Individual departments have been collaborating with partners from the application sector to solve both research and practical tasks. Students in doctoral study programmes are involved in specific research mainly through projects in the Student Grant Competition (SGS. Examples of successful cooperation on a national level include the cooperation with ROPID, the preparation of the document "Standard for Changing Points and Stops", a joint material produced by IDS Prague and the Central Bohemian Region, a basic binding concept paper regulating this area and an ideological backing for their proposal. A team of students in bachelor study programmes regularly attends the Middle European Planning Seminar (MEPS), which is held alternately in the Czech Republic, Austria and Hungary. The seminar takes one week, during which students in international teams solve selected transport-engineering problems of the host city - in 2018, the seminar took place in Eger, Hungary. Talented students at FTS are involved in expert and scientific research activities as student research assistants, or through their involvement in projects, grants and experiments.

The Faculty of Biomedical Engineering also actively supports the development of research activities. For instance, the motivation directive for FBME staff stipulates financial support for submitting applications for research grants and for employees' career growth. Priorities in this field include ensuring multidisciplinary personnel, equipment and material for implementation of multi-year national and international grants, project-oriented cooperation. A targeted support is aimed at enhancing cooperation with leading representatives of clinical workplaces and participation in research projects and centres. In 2018, employees and doctoral students at FBME authored or co-authored 51 papers in impacted journals indexed in WoS SCIE/SSCI. Also relationships with the application sector are actively developed, as evidenced by two

successfully completed projects of contractual research in 2018 and two patents awarded by the Industrial Property Office of the Czech Republic. In 2018, 14 scientific and research teams worked at the faculty http://www.fbmi.cvut.cz/veda-a-vyzkum/vedecke-tymy. Also students at FBME were involved in research. In the CTU Student Grant Competition (SGS), FBME students received 18 new grants in 2018. In addition, staff at FBME were recipients or co-recipients of five GAČR grants, one TAČR grant, seven grants of the Ministry of Health, one grant from the European Commission's Horizon 2020 programme and seven other research grants and projects.

The Faculty of Information Technology fully supports students' involvement in creative activities. In addition to student grants and scientific conferences, students have a possibility to work in applied research in research laboratories or as members of research groups at FIT. Other examples of the connection between creative and educational activities include the involvement of students in contractual research within the faculty portal Cooperation with Industry. The portal allows students to engage in solving problems indicated by outside partners, both as part of outside educational activities and as part of selected subjects taught at the faculty, for example in the form of semester projects.

At **the Klokner Institute**, many teachers are also project executors and in this way they systematically transfer newly acquired information to students at all levels of study. In 2018, the institute implemented a total of 37 projects (National Centres of Excellence and Competence, projects of the European Commission – OP VVV and the Operational Programme Prague – Growth Pole of the Czech Republic, TAČR, GAČR, the Ministry of Industry and Trade, the Ministry of Education, Youth and Sports, the Ministry of Culture, SGS, etc.), participated in two COST projects in Europe and was involved in the Erasmus+ exchange programmes. Creative and educational activities are also connected in the framework of the Student Grant Competition, where academic staff directly cooperate with students in master and doctoral study programmes on the solution of research tasks. In this way, students are involved in virtually all grant projects implemented at the institute.

The connection between scientific and creative activities and educational activities is an integral part of instruction at **the Masaryk Institute of Advanced Studies**. In follow-up master study programmes this happens primarily in specialized subjects, where outside experts are actively involved in instruction and research. The implementation of new knowledge or experience in instruction is reflected in particular in regular innovation of subjects solved in diploma theses. In 2018, cooperation with the application sector was boosted by the incorporation of the Institute of HR Management, led by prof. Zuzana Dvořáková, into MIAS. The Institute of HR Management, in cooperation with the Masaryk Institute of Advanced Studies, organized two specialized conferences.

Being an interdisciplinary department at CTU, t**he University Centre for Energy Efficient Buildings** is a meeting point for professionals and a centre of collaboration for researchers and students from different faculties, fields of study and departments. Intense enhancement of further cooperation within CTU, external cooperation with both national and international research institutions and the industrial sector, as well as with foreign industrial and academic entities is one of the centre's main strategic goals. The

University Centre provides scientific background for joint projects and student work. Being a CTU part without own accredited study programmes, the centre is better placed to provide conditions for this kind of work than individual faculties. In 2018, a total of 50 subsidy grants and 110 commissions within contractual research were implemented at UCEEB. Examples of successful cooperation include putting into operation of an S.A.W.E.R prototype intended for extraction of water from air in deserts, which will be part of the Czech pavilion at EXPO 2020 in Dubai, a market launch of the Wave Micro Power Plant, certification of the IAQ 03 sensor of interior environment quality and the WMR 04 technology for distance reading of water meters, commercialization of the innovated version of a smart solar bench within the Smart City Prague concept, creation of a Methodology for Assessment of Sustainable Smart Cities in cooperation with the Ministry for Regional Development and a successful completion of the H2020 More-Connect project.

The Czech Institute of Informatics, Robotics and Cybernetics focuses on interdisciplinary cooperation, excellent research and education in the field of informatics, cybernetics and robotics, primarily in the field of automated control systems and optimization, robotics, computer vision and machine learning, designs of software systems and diagnostic systems, distributed systems for decision making, informatics in construction industry or telematics, bioinformatics, biomedicine and assistive technology. CIIRC with its teams is a cutting edge research and educational workplace for academic workers and students in master and doctoral study programmes at CTU as well as other universities and research centres in the Czech Republic and abroad. CIIRC's main aim is to make accessible research results to the academic sector and to support their subsequent application through intense cooperation with industry and clinical practice.

In the framework of research, development and other creative activity in 2018, **the Institute of Experimental and Applied Physics** focused on excellent basic and applied research in cooperation with CTU departments and research institutions in the Czech Republic and abroad. Research and development focus on a variety of subjects and build on concluded agreements on cooperation and on projects under execution. Students in bachelor, master and doctoral study programmes at CTU and at other Czech and foreign universities are involved in solution of research projects at IEAP. In 2018, the institute's employees, including students who are at IEAP to complete the expert part of their studies, participated primarily in the execution of advanced projects in cooperation with CERN (ATLAS, MOEDAL, LUCID, Medipix), projects in neutrino physics (SuperNEMO and TGV experiments in the underground laboratory LSM, France, the Baikal-GVD experiment in Russia) and the detection of neutralino – a possible bearer of dark matter in the space (the PICO experiment in the underground laboratory SNOLAB, Canada), nuclear physics projects (observation of exotic nuclei in cooperation with ILL Grenoble and JINR Dubna) and space research projects (cooperation with ESA and NASA – pixel detectors in the PROBA-V satellite and the International Space Station, cooperation with Japanese space agency JAXA - pixel detectors in the RISESAT satellite, the GROND experiment).

8.2. Involvement of students of bachelor and follow-up master study programmes in creative activities at CTU

The number of scientific and research projects solved at CTU not only allows, but in the first place requires a massive involvement of students in doctoral and master study programmes in creative activities. Students' participation takes the form of involvement in grant projects or solution of research tasks in qualification theses.

At **the Faculty of Civil Engineering**, students are involved in the framework of the Student Grant Competition, Student Scientific Work (work for faculty departments, Student Scientific Expert Work) and RPMT CTU projects. Students also participate in the organization of workshops, seminars, special lectures of outside experts, exhibitions and competitions. The subjects of theses and studio projects are selected so that they are in line with and help develop creative activities at the faculty.

In April 2018, **the Faculty of Mechanical Engineering** CTU organized the conference of Student Scientific Activities where students at bachelor, follow-up master and doctoral study programmes presented the results of their work achieved during the academic year in various categories and sections.

At the same time, already in the 2nd semester of their studies, the best students can participate in the projects announced and supported by individual institutes, which aim to involve those interested in scientific research activities implemented at individual institutes. A separate portal is created on the faculty's website, where these topics are listed and which facilitates orientation in the proposed project topics.

Students of bachelor and master study programmes working at the Institute of Intermedia, a joint creative and research institute of CTU and the Academy of Performing Arts (AMU) based at **the Faculty of Electrical Engineering**, participate in projects combining technical solutions and art. Students of CTU and AMU collaborate in team projects, which are part of subjects Intermedia Work and Technology I and II (A7B39ITT and A7B39ITT2, and A0M39ITT1 and A0M39ITT2 respectively).

Together with the Faculty of Mechanical Engineering, FEE organizes the eForce FEE Prague Formula, which promotes cutting edge electric cars constructed by student teams. Each year the faculty organizes an international seminar POSTER, where students publish results of their creative work in international environment. Furthermore, a number of primarily master students are active and indispensable participants in solution of top scientific projects, solve SGS grants and also play an important role in specialized grants at departments.

The involvement of students in creative activities is historically one of the strengths of **the Faculty of Nuclear and Physical Engineering**. It takes place within the framework of student qualification theses, i.e. bachelor theses, research assignments and diploma theses. As a rule, results achieved in this way serve as part of the solution of grant projects and in this way, students are encouraged to work within research teams from the very beginning. These projects are granted by national agencies and ministries as

well as by international agencies, consortia and foundations. A number of students work on solution of projects under the EU or CERN framework programmes, among others.

In addition, a number of topics of qualification theses are announced by representatives of partners in industry, such as CRYTUR or NUVIA.

At **the Faculty of Architecture**, students were involved in creative activities within the RPMT, GAČR, NAKI II, ESF, ERASMUS+ and SGS projects.

Students' work is regularly presented at international competitions and exhibitions. Student Markéta Nováková won the 1st place in the Best in Design competition in the category Best Product Design and was also announced as winner of the 2018 Best in Design global competition with her product "Lunt Scooter". In the same competition, student Ivan Valigura came third in the Industrial Design category with his project "Train Seats". Student Petr Matoušů received a special prize of the president of the jury in the 2018 Young Package competition for his project in which he looked into storage of coffee filters.

At **the Faculty of Transportation Sciences**, talented students can work as student research assistants. Through work at various institutes they gain insight into work on scientific projects and help with experiments. Active students in follow-up master study programmes took part in scientific and research projects within the framework of the Student Grant Competition. Many of them later continue in doctoral study programmes.

Students at **the Faculty of Biomedical Engineering** participated in a number of activities leading to further development of creative projects, within the faculty and in CTU as a whole. Students participated in collaborative research projects, making measurements, carrying out tests, and providing expert consultations for healthcare institutions and, in particular, for producers and distributors of medical equipment.

As members of research teams, students worked on tasks in the framework of SGS as well as other projects, including GAČR, TAČR and projects in the framework of safety research. They also helped organize a number of social and cultural events (e.g. Week of Science and Technology, Gaudeamus, Science Festival, Student Iron Fireman, the Day of Healthy Eyes, Open Door Days, Majáles in Kladno, the Day with Integrated Rescue System, Peace Run Kladno-Lidice). In addition, students participated in various student competitions and were actively involved in student scientific conferences.

In April 2018, selected students in bachelor study programme in Information and Communication Technology in Health Care took part in the UnIT coding competition, category ŠKODA AUTO Web App, held under the auspices of FIT CTU in Prague.

Students of the bachelor study programme Medical Rescuer successfully represented the faculty at the 2018 Inter Vitam et Exitum professional competition held in Pardubice, in which they won the 3rd place among paramedic rescuers and contenders from medical faculties. Another event in which students of the Medical Rescuer study programme did very well was the competition exercise Rozkoš Rescue Profi, where they came 16th in a competition with amateur and professional units. In the Orlické Mountains, students of the Medical Rescuer study programme took part in the Yeti Rescue specialized competition, where they competed against professional groups of

Emergency Medical Services and fire brigade units. Students of the faculty who have just finished the 1st year of their studies came 16th. In 2018, students participated in practical demonstrations and teaching of first aid basics for the general public (e.g. Faculty High School V Úžlabině, 31st Polaris Centre - Scout Unit). In the framework of specialized lectures for the public, an event from the First Aid series was held on 27 March as part of the worldwide game Geocaching.

On 17 April, students of the fields of study Civil Emergency Planning and Medical Rescuer attended a joint drill at the National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO) in Kamenná near Příbram. In the theoretical part, students revised the topics of biological, chemical and nuclear protection. In the practical part, they practiced the detection of dangerous substances and the individual steps necessary for their appropriate elimination and decontamination. In addition, they also practiced first aid provided to injured persons and their transport from the contaminated environment. The students were at all times supervised by expert staff at SÚJCHBO.

On 16 May, the fourth annual Jan Lewinský Memorial – 2018 Student Iron Fireman FBME CTU was held. By participating in this event, high school and university students commemorated Jan Lewinský (a student of the study programme in Population Protection, who died while on duty as a member of the Fire Rescue Service of the Czech Republic) and also tested their physical condition by taking part in physically demanding disciplines, preparing for their future jobs. The accompanying programme included a demonstration of removing injured persons from a vehicle in a car accident and a demonstration of the work of the Central Bohemian rescue dog´s brigade.

On 21-24 May, students of the study programme in Population Protection took part in a specialized drill Rainbow 2018 organized at the 15th Engineer Regiment of the Czech Army in Bechyně. A demanding programme was prepared for the students that included theoretical lectures (on first aid, military medical care and military care in natural disasters, Air Search and Rescue Service of the Army of the Czech Republic, etc.) along with practical exercises, in which students actively participated as rescuers. For instance, they dealt with a terrorist attack with multiple people involved, searched for and rescued persons underground, rescued people form a collapsed cave, built flood barriers, practiced abseiling, removing injured persons from a vehicle in a car accident, decontamination of people after a nuclear power plant disaster, etc. Students were given a unique opportunity to combine theoretical knowledge and practical skills.

As part of their spring practice, students of the study programmes Planning and Crisis Management, Civil Emergency Planning, and Medical Rescuer worked as lecturers in educational programmes "Preparation of Citizens for Defence of the Country" and "Protection of Humans in Emergency Situations" at primary schools in Central Bohemia and in Prague. In total, 11,000 children in more than 50 primary schools participated in the lectures held under expert supervision of the Civil Defence Museum in Ústí nad Labem.

Faculty staff and students of the bachelor study programme Biomedical Technician participated in the preparation and implementation of the world congress on biomedical engineering and medical physics IUPESM 2018, which took place on 3-8 June

in Prague. A total number of 800 papers and electronic posters were presented at the congress. About 50 authors from CTU, of which 31 were from the Faculty of Biomedical Engineering, including 21 doctoral students, participated in the congress. Two students presented three papers as principal authors and 20 students presented papers as co-authors. They were students of the fields Biomedical Technician, Biomedical Engineer, and Systematic Integration of Processes in Health Care. During the congress, students of the field Biomedical Technician also provided technical support to Educational Sessions. The participation of the entire second year of the field Biomedical Technician in the congress was essential as in this way the students were able to acquire up-to-date information about the latest developments in the field. Students attended a number of lectures and papers in English and were required to write a structured paper on the newly acquired knowledge, which was part of the assessment in the course. The above list of activities confirms once again that the graduates of the bachelor study programme Biomedical Technician are exceptionally well prepared in their specialized field as well as in languages, and can thus work in research teams at the faculty and undertake practical activities already in the course of their studies.

On June 20, students at the faculty attended the Museum 2018 drill organized by the Emergency Medical Service of the City of Prague together with the Police of the Czech Republic and the Fire Rescue Service of the Czech Republic. The drill simulated a terrorist attack at the Museum metro station full of passengers. The drill was attended by students of the fields Civil Emergency Planning, Planning and Crisis Management, Medical Rescuer as well as the fields of Optics and Optometry and Biomedical Technician.

The Smart Health Hackathon Prague 2018, an event with a European dimension, in which students at the faculty participated, took place on 26-28 October under the auspices of FBME.

On 22 October, the faculty took part in an event titled "International Day of Seniors, Bones and Joints" organized by the Regional Hospital in Kladno. Future rescuers demonstrated to the general public resuscitation, which seniors could try out on a resuscitation manikin. They could also check their stability on the Nintendo Wii platform. The PROTECT service (24/7 remote assistance service) developed by faculty staff in collaboration with physicians was also presented at the event.

Involvement of students of bachelor and master, or follow-up master, study programmes in creative activities at CTU. Students of bachelor and master study programmes at the **Faculty of Information Technology** had the opportunity to participate in the portal Cooperation with Industry (SSP), which was in its fourth year in 2018. This portal enables students to work on interesting tasks formulated by industrial partners, and to be paid for their work, which makes their studies more interesting. Students had a possibility to participate in the 2018 internal competition to support development projects of academic staff and students in the framework of the CTU Institutional Plan. Students of the master study programme can also get involved in the CTU Student Grant Competition. In addition, a number of students actively participate in creative activity at the faculty when working on their semester projects and their theses.

8.3. Financial resources in support of research, development and innovation received in 2018

The specific financial resources in support of research, development and innovation received in 2018 totalled CZK 1,711,424,870 of which CTU spent CZK 1,523,131,260 on grants and projects. CZK 188,293,610 was paid out to partners and suppliers.

8.4. Support for students of doctoral study programmes and postdoc employees

CTU strives to provide support for doctoral students and postdocs. CTU as a whole monitors their study and work conditions. Individual faculties and university institutes are reponsible for doctoral study programmes and working conditions of each postdoc.

The Faculty of Civil Engineering strives to create conditions for promising young teachers and scientific staff (postdocs) to improve their qualifications, rise up the scientific and teaching ranks, and for the most successful among them to get involved in research. The faculty aims to provide salaries and to set up a remuneration system to allow these young researchers to dedicate themselves fully to scientific research and teaching, participating in scientific projects or in the form of grants provided to active students based on the assessment of their scientific research outcomes in the previous year. The faculty established an Initiation Fund with the aim to support and increase the number of received international projects, support young scientific workers and strengthen international cooperation. Students in doctoral study programmes are members of research teams and participate in national and international projects in basic and applied research as well as contractual research. Their scientific research work also receives support in the form of grants from the Student Grant Competition, financed from funds for specific research.

At **the Faculty of Mechanical Engineering**, doctoral students and postdocs continued to be involved in cooperation with partners from industry in the framework of contractual research. This creates close ties to industrial practice, improves financial remuneration for employees and students while at the same time partners' knowhow is shared without the university losing its best workers. Student Grant Competition and other project activities financed from donations, such as the Zvoníček Foundation, provide support for independent work of doctoral and other students. Improving the infrastructure of research centres plays an important role in enhancing the quality of doctoral studies in cooperation with the University Centre for Energy Efficient Buildings, the Innovation Centre for Diagnostics and Application of Materials, and the Centre of Vehicles for Sustainable Mobility VTP Roztoky. These activities were performed under projects, in the framework of which doctoral students were involved in scientific research activities at these centres through part-time employment. Already when developing selected study programmes (e.g. Nuclear Power Engineering Equipment,

Aeronautics and Astronautics), the faculty cooperated with outside experts, who at the same time also participate in teaching of specialized subjects.

The Faculty of Electrical Engineering monitors the financial situation of doctoral students. In addition to the state subsidy scholarships, financial resources from the Student Grant Competition of the Ministry of Education, Youth and Sports and grant projects are used. A one-off special-purpose dean's scholarshop can be granted for exceptional results of creative or pedagogical activity or to support the study of foreigners in the Czech Republic.

Students of doctoral study programmes at **the Faculty of Nuclear Sciences and Physical Engineering** are supported by involvement in projects of the Student Grant Competition and national and international projects of applied and basic research. They also participate in research as part-time employees in the framework of the project "Centre of Advanced Applies Sciences – CAAS" within the Operational Programme Research, Development and Education (OP VVV). Doctoral students and postdoctoral workers are encouraged to participate actively in scientific conferences, to publish papers and participate in scientific grants. Postdoctoral workers are also encouraged to take part in exchange stays abroad, for instance, as part of the OP VVV Mobility projects.

In the course of their studies, students of doctoral study programmes at **the Faculty of Transportation Sciences** are involved in research projects at individual departments or in the framework of university activities. A great number of them implement their own projects in the framework of the Student Grant Competition SGS, or are members of national and international projects (TAČR, GAČR, OP VVV, H2020). Students are also encouraged to participate in study stays abroad funded from project or faculty's own resources. The biannual Young Transportation Engineers Conference focuses on research projects carried out by doctoral students; in 2018, the conference was in its 3rd year.

Students of doctoral study programmes at **the Faculty of Biomedical Engineering** are supported by grants from the CTU Student Grant Competition (18 new grants were accepted at FBME in 2018) and have the opportunity to develop their communication and presentation skills through the support of CTU student scientific conferences (SVK) (5 were approved at FBME in 2018). In addition, doctoral students received financial support from specific research funds and in the form of scholarships, including motivation extraordinary doctoral scholarships, which are awarded individually at FBME based on the achieved scientific and research or publication results in the previous year. The basic concept of support for students of doctoral study programmes at FBME is an individual approach to creative activity during doctoral studies, the involvement of students in national and international grants/projects of basic and applied research and support for the mobility of doctoral students. The faculty's scientific and pedagogical staff were further supported, for example, in an internal competition to support the development projects of academic staff and students at FBME CTU within the 2018 CTU Institutional Plan. At the end of the year, FBME got involved in a CTU programme HR Award under the OP VVV programme, which will, among other things, more closely specify the position of postdoc students and their incorporation in the CTU Career System.

The Faculty of Information Technology continues to create stable conditions for the support of students in doctoral study programmes. At the same time, the faculty insists on increasing the quality of scientific research activity of doctoral students. Students in doctoral study programmes and postdoctoral workers are systematically involved in project teams awarded by GAČR, TAČR, SGS, etc. For the first time in 2018, the faculty could financially support doctoral students studying in standard period of study in full-time form of study.

At the **Klokner Institute**, students of doctoral study programmes regularly participate in the Student Grant Competition. Doctoral students and postdoctoral workers are regularly involved in the solution of national and international projects of applied and basic research, as well as contractual research and the work of the accredited laboratory.

In the first half of 2018, **the Masaryk Institute of Advanced Studies** administered the organization of the doctoral study programme in History of Technology. Based on a mutual agreement, since mid-2018, the study progamme is administered by the CTU Rector's Office.

At **the University Centre for Energy Efficient Buildings,** students in all study programmes (from bachelor to doctoral) are involved in practical implementation of new scientific and research findings and in cooperation with partners in industry. In 2018, over 100 master students worked in the centre and 47 doctoral students were employed there. More students from different faculties work at the centre while working on their student projects and execution of various experiments. When it comes to work with students, UCEEB employs so-called Real Life Learning Lab concept (RLLL), which helps improve the quality of technical education and enhance its attractiveness as well as link educational and research theory and practice. As part of their student projects, bachelor and master students solve practical research tasks under the supervision of and in cooperation with leading researchers and outside experts. Other parts of the centre's strategy include seminars and workshops for students, national and international internships in companies and partner universities. In 2018, four employees went on internships abroad, all of whom were students in doctoral study programmes. In the course of the year, 12 students of master or doctoral study programmes from foreign universities and 27 researchers from research organizations abroad actively participated in research and research and educational activities at UCEEB.

The Czech Institute of Informatics, Robotics and Cybernetics contributes to the support of students of doctoral study programmes and postdocs through its researchers, who at the same time often work as academic staff and supervisors in study programmes of other CTU faculties. In addition, doctoral students and postdocs are a valuable addition to a number of research teams, where, under the guidance of experienced researchers, they are given the opportunity to engage in solving specific research tasks, often in projects with international participation. Further, eClub led by Jan Šedivý is a unique platform for young talents at CIIRC. Its main aim is to support innovative ideas of students and to put their business plans into practice. Student work is supported by scholarships from the CTU Media Lab Foundation, in which partner industrial companies

are involved as sponsors of this scientific incubator (e.g. Certicon, Seznam.cz, Cybex, etc.).

The latest success of students at eClub is the Alquist project, a chatbot working with the Amazon Echo smart device, which made it to the finals of The Alexa Prize held in California. The Czech team, led by J. Šedivý, won the second prize and recevied $ 100,000 in 2017 and also in 2018.

At **the Institute of Experimental and Applied Physics**, students of doctoral study programmes and young postdocs are involved in a number of international programmes of basic and applied research, under which the institute sends them to foreign partner institutes and foreign conferences. This greatly contributes to improving both their professional and linguistic skills. Doctoral students at IEAP are involved in solving projects of the Student Grant Competition and are also supported by employment contracts.

8.5. Participation of the application sector in devising and running study programmes

Depending on the nature of each faculty, experts from the application sector are involved in the implementation of the study programmes to a varying degree. Where possible and appropriate the process is supported as it facilitates a closer connection between the university and the industry and raises awareness of the necessity of cooperation with the university.

At **the Faculty of Civil Engineering**, experts from the application sector participated in devising and organizing study programmes as external teachers, members of final state examinations committees, members of specialization committees for doctoral study programmes and as members of education committees for bachelor and master study programmes. Student competitions organized by companies active in the field of construction are supported. In 2018, faculty's strategic partners included Hochtief, Metrostav and SMP Vinci, its main partners were Strabag and OHL ŽS. The partners offer study or holiday practical trainings, part-time jobs, internships, topics for master theses and consultants from among their staff, documentation for instruction or for seminar projects or master theses, excursions to significant or unique construction projects carried out by the company, the possibility of employment in the company, the possibility of professional and career growth.

At **the Faculty of Mechanical Engineering**, experts from the application sector are involved in teaching blocks of lessons in follow-up master study programmes and series of specialized lessons intended for all students at the faculty.

This primarily includes lectures in specialized subjects in the field of nuclear and conventional power engineering, continuum mechanics, automobiles and combustion engines, etc. These lectures are attended by large audiences and are also positively evaluated by students in the framework of the student questionnaire.

In 2018, opinions of experts from the application sector also helped to define new profiles of graduates from newly accredited study programmes that were submitted to the National Accreditation Burreau pursuant to the amended Act on Higher Education Institutions.

The Faculty of Electrical Engineering invited leading experts working in the application sector to participate in designing accredited study programmes, and paid great attention to their proposals. A number of external professionals taught various courses.

Their membership in final state examinations committees is of great importance (their participation is stipulated in a dean's guideline) as is their role as reviewers and supervisors of students' theses. As a rule, external professionals working in the application sector form a substantial part of committees for bachelor and master study programmes as well as the faculty's scientific committee.

The Faculty of Nuclear Sciences and Physical Engineering invites outside experts to teach specialized subjects, but due to the demanding requirements regarding the content and quality, they are usually not professionals from the application sector. It is usually teachers from other universities, the Academy of Sciences and other research institutions, who work at the faculty as external teachers.

At **the Faculty of Architecture**, outside experts are involved in theroretical instruction and most importantly in studio instruction. Architectural and design studios are led by erudite practicing architects and designers. Students' semester, bachelor and master theses in the study programme in Design are also developed based on commissions created in cooperation with renowned companies, such as RWE, Sapeli, Technistone, Galavito, Tesla, Meva, Meopta, Viadrus, Lasvit.

In addition to traditional cooperation, the connection between practice and instruction is also carried out in the form of participation of professionals with their expert knowledge in research projects. In this way, students are acquainted with modern methods and approaches in the given field and enhance their employability after the completion of their studies. Outside experts are also present at final presentations and assessment of studio projects and are also external members of state final examination commitees and committees for the presentation and defence of theses.

The faculty also has its representatives in leading Czech and inernational organizations:

- IPR – L. Lábus, member of the Gremium Board
- EAAE – D. Hlaváček, member of the steering committee
- AESOP – K. Maier, J. Vorel, representatives of FA
- eCAADe – H. Achten, D. Matějovská, representatives of FA
- TICCIH – B. Fragner, representative of FA and member of the board of The International Committee for the Conservation of the Industrial Heritage, VCPD is a collective member
- Arbeitskreis für Hausforschung – M. Rykl
- ICOMOS – Establishment of a working group for architecture of the second half of the 20th century at the Czech National Committee, chair of the group – P. Vorlík
- DOCOMOMO – The Faculty of Architecture is a member, represented by P. Vorlík

- UNECE – advisory board of the Housing Committee – D. Tichý.

The participation of the application sector in devising and running study programmes at **the Faculty of Transportation Sciences** takes the form of the involvement of experts in bachelor, follow-up master and doctoral study programmes. They are particularly involved in project-oriented instruction as supervisors of projects or bachelor and master theses. Cooperation is also developed in the form of lectures presented by outside experts in specialized subjects in the implemented study programmes.

The application sector participated in devising and running study programmes at **the Faculty of Biomedical Engineering** through the involvement of leading professionals in the activities of the faculty's scientific committee and their active involvement as teachers in all forms of study, supervisors and reviewers of bachelor and master theses and supervisors in doctoral study programmes and their membership in final state examinations committees and doctoral examinations committess. Cooperation with the application sector also included practical training. In this way, students had a possibility to get to know the individual employers and gain employment contracts already during their studies. Feedback provided by the employers as part of the assessment of practical training contributed to the enhanced quality of the content of the study programmes and the practical training itself, so that the acquired knowledge is really in line with the current requirements of companies and graduates are able to find relevant jobs in the labour market.

The applications sector represented by professionals from outside the faculty participated in creating and organizing study programmes at **the Faculty of Information Technology** through their participation in the faculty's scientific committee, in the specialization programme committee and in the specialization committees of doctoral study programmes. Outside experts also participate actively as lecturers and trainers at all levels of study, supervisors and reviewers of bachelor and master projects and as external members of final state examination commissions. Some of them also supervise doctoral theses.

At **the Masaryk Institute of Advanced Studies**, the application sector participated in devising and running study programmes in several different ways. The cooperation with outside experts successfully continued in all accredited study programmes in the form of invited lectures which introduce modern trends into the studied field and by involving leading outside experts in the activity of the MIAS Scientific Board. Experts from the application sector are also involved as consultants and reviewers of bachelor and master theses, supervisors in the doctoral study programme and members of the state final or doctoral examination committees. Within the study programme in Specialization in Pedagogy, also compulsory practical training has traditionally been part of the cooperation with the application sector.

8.6. The nature of cooperation with the applications sector in creating and transferring technologies and their commercialization

The Department of Project Management and Technology Transfer provides a wide range of specialized services to CTU (the Rector's Office, faculties and constituent parts). The services include administration and management of subsidy projects, specialized education, protection of CTU's intellectual property rights, commercialization of science and research results and support to new companies. The department looks for project opportunities, supports project recipients, administers the protection of intellectual property rights including support from the Licence Fund and provides professional leadership of innovative projects in the CTU InQbay entrepreneurial incubator. The department employs experts from the commercial sector, specialists in trade, marketing, communication, protection and administration of intellectual property and project managers with experience in drafting and managing scientific grant projects. In 2018, the department's comprehensive services included, for example, the administration of intellectual property rights and follow-up commercialization of UST – Uniaxial Shear Tester by the Faculty of Civil Engineering. The patent is jointly owned by CTU and the University of California. The department secured patent protection (supported from the Licence Fund) for Europe and for several countries in America, Asia and Africa. Subsequently, the solution was commercialized by selling the prototype to Canada. This was the first successful sale outside the Czech Republic.

The implementation of the project "Development of External Capacities for Technology Transfer at CTU" under the Operational Programme Science, Research and Education is an example of the department's project activities focused on the support of innovation and cooperation with the application sector.

In 2018, the department was actively involved in the activities of Transfera, a unified functional platform protecting the interests of the Czech transfer community, whose aim is to advance and strengthen technology transfer.

A **Commercialization Committee** was established at CTU, in which outside experts are strongly represented. The committee issues recommendations and in some cases it also takes decisions on initiating or terminating commercialization projects of inventions made by employees and students at CTU.

Protection of intellectual property rights is also supported by the **CTU Licence Fund** and its board.

8.7. Support for horizontal mobility of students and academic staff, their education and development of competences for innovative entrepreneurship

CTU in Prague has long been striving to support mobility of students and academic staff in research by supporting quality projects of individual researchers and by supporting professional growth of researchers through cooperation with foreign entities. In 2018, call no. 050 continued to be implemented under the Science, Research and Education Operational Programme, and call no. 027 was initiated under the same programme.

The main aim of the project "**International Mobility of MSCA-IF Research Workers at CTU**" (call no. 050) is to enable international mobility of research workers whose projects were approved in recent years under the programme "Marie Skłodowska-Curie Actions Individual Fellowships". Under this call, three researchers from among CTU employees whose projects were approved in recent years participate in mobility. One of them has already finished their mobility programme.

The aim of the project "**International Mobility of Research Workers at CTU**" (call no. 027) is the implementation of international mobility of CTU research workers with the aim to strengthen international cooperation and development of human resources in research. The project also aims to support professional growth of research workers and the development of CTU research organizations through strengthening of human resources. The project is implemented through work stays of research workers abroad (in case of outgoing mobility) or through work stays of research workers in the Czech Republic (in case of incoming mobility), in which over 70 research workers have already participated.

Call no. 70 has a similar focus. Under this call a project application titled "**International Mobility of MSCA-IF II Research Workers at CTU in Prague**" was submitted and approved for five research workers. The implementation is planned for 2019.

International mobility of research workers is one of the most important development activities at CTU and it is managed and administered by the Department of Project Management and Technology Transfer at the CTU Rector's Office.

8.8. Statistics of creative activities

Tab. 8.1

Conferences (co)organized by university (number)		
	With over 60 participants	**International conferences***
Faculty of Civil Engineering	8	5
Faculty of Mechanical Engineering	6	6
Faculty of Electrical Engineering	3	3
Faculty of Nuclear Sciences and Physical Engineering	5	18
Faculty of Architecture	0	0

Faculty of Transportation Sciences	3	5
Faculty of Biomedical Engineering	3	2
Faculty of Information Technology	5	4
Klokner Institute	1	1
Masaryk Institute of Advanced Studies	2	1
University Centre for Energy Efficient Buildings	1	1
Czech Institute of Informatics, Robotics and Cybernetics	1	2
Institute of Experimental and Applied Physics CTU	0	2
TOTAL	**38**	**50**

Note: *An international conference is a conference in which at least one foreign speaker participates and whose papers are at least in one of the following languages - English, French, German, or in a language related to the professional specialization of the conference, e.g. in case of philological disciplines.

Examples of outstanding conferences:

The 9th International Symposium on Steel Bridges, Prague 2018, 10-11 September 2018, International Symposium on Steel Bridges is organized by national members of ECCS every 3 years. In Prague, the conference was organized by the Czech Cosntructional Steelwork Association in cooperation with CTU in Prague. Over 250 bridge engineers from all over the world attended the conference, where 120 papers were presented. The 5th European Steel Bridge Awards were handed out at the conference, to which projects carried out in the past 3 years can be nominated by national committees, and the Charles Massonnet Award. An international jury, including Czech representative doc. P. Ryjáček, selected winning projects in several categories, of which the two most prominent ones are road and railway bridges, and pedestrian and cycle bridges. The annual sessions of ECCS, the executive committee, the general assembly, the technical and marketing committee were held at the conference after the symposium.

http://www.steelbridges2018.com/.

The 23rd meeting of THERMOPHYSICS, 7-9 November 2018 Smolenice, about 40 participants from seven countries, web pages:

https://tph.thermophysics.eu/, papers published in the AIP Conference Proceedings, included in the Web of Science and Scopus.

The 12th fib PHd SYMPOSIUM in Prague, the International Federation for Structural Concrete (fib) organizes biannual symposia for doctoral students of the field Civil Engineering. The main aim of the symposium is to establish international contacts for young egnineers and give them the opportunity to exchange experience gained through scientific work. After two editions of the PHd symposium held oversees (2014 Quebec, 2016 Tokio), the event was once again held in Europe, more specifically in Prague on 29-31 August 2018. As a rule, it is held at a university, this time it was hosted by the CTU Faculty of Civil Engineering. A total of 199 visitors, of which 163 were

students, 31 professors and supervisors of theses and 5 sponsors came to Prague, http://www.betontks.cz/sites/default/files/2018-5-77.pdf.

On 19-20 August 2018, the 28th International Conference Radioelektronika 2018 was held. On 10 May 2018, the 22nd edition of the international student scientific conference Poster 2018 and on 13-17 August the 18th International Conference on Representations of Algebras (ICRA 2018) were organized. On 18-22 June 2018, FNSPE organized a conference titled "Stochastic & Physical Monitoring Systems". On 9-13 July 2018, the Faculty of Nuclear Sciences and Physical Engineering hosted an international conference titled "The 32nd International Colloquium on Group Theoretical Methods in Physics (Group32)", during which prestigious international awards in mathematical physics, Wigner Medal and Weyl Prize, were presented.

The regular student scientific conference titled Šimáně 2018 organized by the Department of Nuclear Reactors was held on 25-26 June 2018. On 21-22 November 2018, the Faculty of Transportation Sciences co-organized the Safety & Security Conference Prague 2018 (12th International Safety and Security Conference), which welcomed about 200 participants. Another example of this collaboration in organization was the 20th edition of the international conference New Trends in Civil Aviation 2018 attended by about 40 participants.

On 4 April, the Department of Natural Sciences, Faculty of Biomedical Engineering, organized the second student conference entitled the "Optics and Optometry Forum 2018", in which students of and graduates from the study branch Optics and Optometry took part and which was supported by a SVK project and cooperating companies (Cooper Vision, TOPCOMED).

On 16 April, FBME, in cooperation with the Society for Radiobiology and Crisis Planning of the Czech Medical Association of J. E. Purkyně, organized a specialized conference on "Possibilities of Rehabilitation in Affecting Pain Conditions", which was intended for students, doctors of all specializations and experts in paramedical professions.

On 10 May, the 8th edition of the conference entitled "Instruments and Methods for Biology and Medicine 2018" was held. The papers presented by students at the conference in English covered a wide range of topics including biomedical nanotechnologies, molecular biology, genetic engineering, biosensors, physical methods for diagnostics and therapy, biomechanics, optics and others. The speakers at the conference also included two guest experts in biomedical engineering – Dr. Mariana Amaro (J. Heyrovský Institute of Physical Chemistry, CAS) and Dr. Martina Plisová (Medicem Institute).

On 9 July, the faculty, together with the Society for Radiobiology and Crisis Planning of the Czech Medical Association of J. E. Purkyně and under the auspices of MUDr. Věra Adámková, CSc., chair of the Committee on Health Care of the Chamber of Deputies of the Parliament of the Czech Republic, organized a national conference under the title "Preparedness of Health Care Centres for Emergency Situations". The event included lectures by experts at the Department of Health Care and Population Protection, faculty hospitals, the National Institute for Nuclear, Chemical and Biological Protection, the

Ministry of Health of the Czech Republic, the Police Academy of the Czech Republic and the Association of Emergency Medical Services of the Czech Republic.

From 5 to 9 September, the 7th edition of the student conference under the title "Respiratory Days" was organized by prof. Roubík's research group as part of student scientific conferences. Leading Czech researchers and managers of anaesthesiology and resuscitation departments and intensive care units participated in the event. For the first time this year, a round table on "Breathing in Avalanches" was included in the conference.

On 12 October, the 8th annual conference on "Aspects of the Work of Helping Professions – AWHP 2018" took place at the Medical House (Lékařský dům) in Prague. The conference was organized by the Department of Health Care and Population Protection. The conference offered a number of attractive lectures and the poster section included 12 posters.

On 11 December, the Department of Biomedical Technology organized a conference entitled "Electrical Heart Signals: From Myocardial Potentials to ECG". The conference focused on presentation of research projects of faculty's students, doctoral students and researchers who study cardiac electrophysiology and processing of electrical signals of the heart. The conference's main aim was to present the results of scientific and research activities of students and doctoral students, including raising awareness of defended or prepared research projects in the given field and getting inspiration in the selection of the topics of bachelor, master or doctoral theses.

On 29-31 August, the Faculty of Information Technology hosted the Euromicro DSD/SEAA 2018 conference focused on current trends in the field of inbuilt, high-performance and cyberphysical applications, HW/SW co-design and SW engineering.

In 2018, the Masaryk Institute of Advanced Studies co-organized two specialized conferences – Economy and Business: Theory and Practice 2018, held in Prague on 23 February 2018, and Digitalization of Society, Economy, Management and Education on 14-15 December 2018. MIAS also organized the Albín Bráf conference, which took place in Prague on 30 May 2018.

On 11-21 September 2018, a specialized exhibition organized by UCEEB in cooperation with German partners BMU, BMI and others, under the title "Efficient Buildings Plus Nets and Clean Mobility" was held at the Old Town Hall.

The Czech Institute of Informatics, Robotics and Cybernetics organized the 3rd Conference on Artificial Intelligence and Theorem Proving, AITP 2018, http://aitp-conference.org/2018/, Aussois, France, 25–30 March 2018, ca 50 participants, Josef Urban CTU CIIRC (co-chair), and ICMS 2018, http://icms-conference.org/2018/, Notre Dame, 24–27 July 2018, ca 100 participants, Josef Urban CTU CIIRC (Programme Chair).

Some of the conferences were financed as student conferences in the framework of the Student Grant Competition.

Tab. 8.2

Experts* from the application sector involved in teaching and practical trainings in accredited study programmes (number)						
	Persons who concluded a work agreement with university or its part			Persons who did not conclude a work agreement with university or its part		
	Number of persons involved in teaching	Number of persons involved in supervising theses	Number of persons involved in specialized internships	Number of persons involved in teaching	Number of persons involved in supervising theses	Number of persons involved in specialized internships **
Faculty of Civil Engineering	123	0	0	0	0	0
Faculty of Mechanical Engineering	45	20	0	25	5	0
Faculty of Electrical Engineering	27	110	0	5	0	8
Faculty of Nuclear Sciences and Physical Engineering	0	0	0	0	0	0
Faculty of Architecture	92	43	0	81	10	0
Faculty of Transportation Sciences	196	196	0	97	12	0
Faculty of Biomedical Engineering	44	25	5	75	48	41
Faculty of Information Technology	56	12	0	13	42	1
Masaryk Institute of Advanced Studies	56	22	1	9	0	0
TOTAL	**639**	**428**	**6**	**305**	**117**	**50**

Note: *Experts from the application sector involved in at least one third of the time schedule of at least one course or who act as supervisors of students' theses. In case the person is permanently employed by the university/faculty, they should have another job with at least the same FTE outside the university/faculty.
Note: **These are individuals who are directly responsible for a student's practical training

Tab. 8.3

Fields of study/study programmes*** whose content includes compulsory practical training** lasting at least 1 month* (number)		
	Number of fields of study***	Number of students studying these fields of study
Faculty of Biomedical Engineering	7	764
TOTAL	**7**	**764**

Note: *The duration of individual compulsory practical trainings may be shorter, but the total duration must be at least one month.

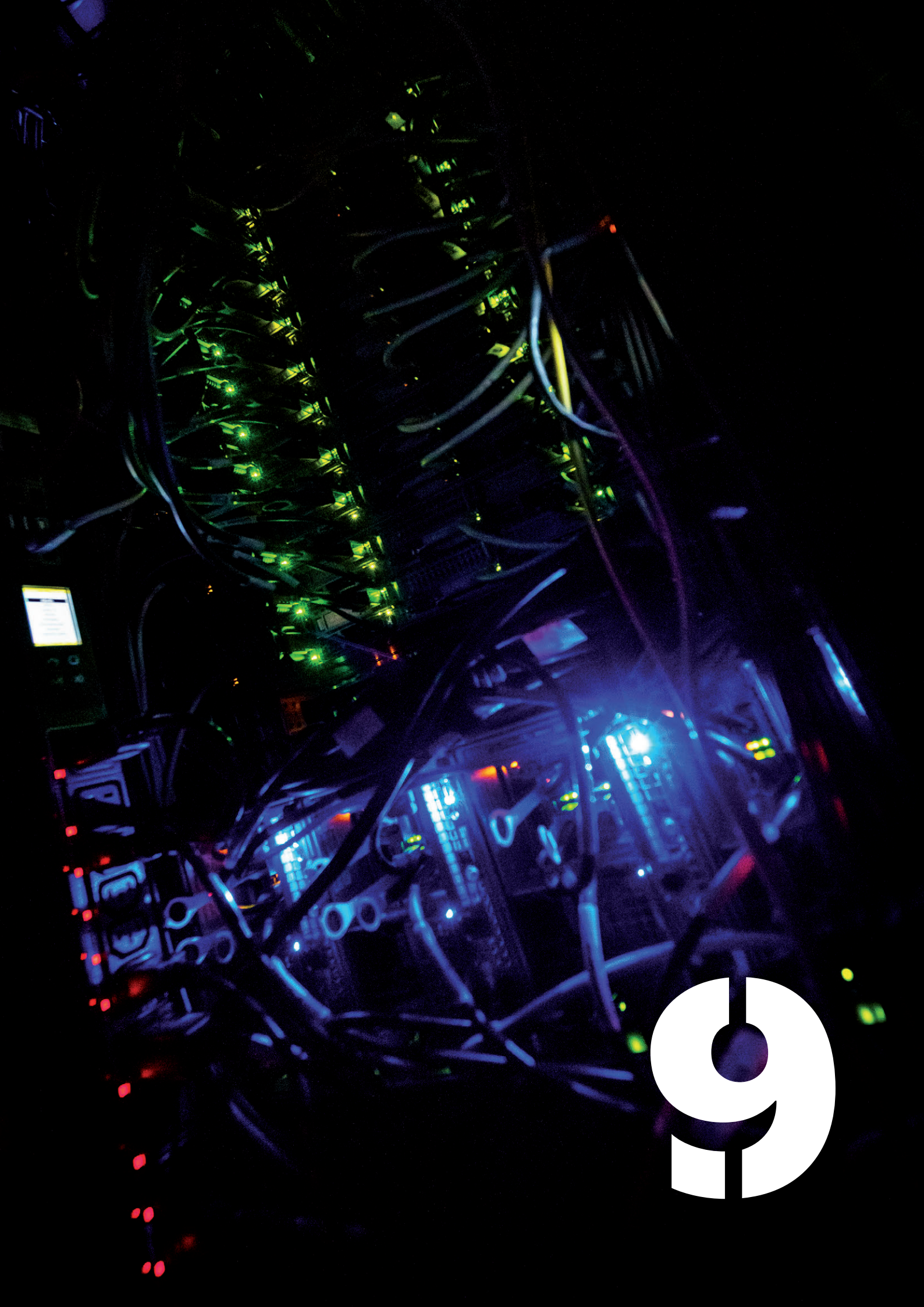
Note: **Compulsory practical training is a practical training that is part of the accreditation of the given field of study; it can be part of one of the subjects or it can be an independent subject. It is a specialized practical training.
Note: ***The university will insert the data related to the lowest accreditation unit – in proportion, a field of study, unless a study programme is divided into fields of study, and also the data relevant for the study programme.

Tab. 8.4

Transfer of knowledge and research outcomes to practice				
	In CR	**Abroad**	**TOTAL number**	**TOTAL revenues in thousands of CZK**
Number of spin-off/start-up companies*	0	0	**0**	**0**
Submitted patent applications	42	9	**51**	**0**
Granted patents**	29	8	**37**	**0**
Registered designs	72	0	**72**	**0**
License agreements in effect as on 31 December	15	0	**15**	**1 851**
Newly concluded licence agreements	3	0	**3**	**0**
Contractual research***, consultations and advisory***	3 504	0	**3 504**	**367 888**
Paid educational courses for employees of entities from the application sector***	89	0	**89**	**3 154**

Note: *Newly established spin-off/start-up companies supported by the university in 2018 (number).
Note: **In case of a European patent, the patent is reported only once in the section "Abroad" regardless of the number of designated countries.
Note: ***The definition of items related to revenues and the items' value in the table is in line with the 2018 annual report on finance of the university (Tab. 6). SVŠ will complete these items upon discretion.

Summarized information for Tab. 8.4		
Newly concluded license agreements, contractual research, consultations, advisory and paid educational courses for employees of entities from the application sector	Total number	Total revenues in thousands of CZK
	3 596	371 042
	Average revenue per contract in thousands of CZK	
	103	



9. Ensuring quality and assessment of performed activities

9.1. Quality assessment of education in 2018

The quality of activities and processes is assessed at every level of management. The CTU Internal Evaluation Board plays a special role in this process and it issues an independent report on its evaluation. The assessment at the level of constituent parts of CTU is detailed below.

The Faculty of Civil Engineering carries out regular surveys among students through the Anketa web application and, together with the Students Chamber of the Academic Senate, continuously strives to increase the number of students taking part in the questionnaire. The results are then used as a basis for subsequent measures taken at the level of heads of departments and faculty management. A meeting with the faculty management and the academic community is part of the evaluation of the questionnaire, during which current problems and suggestions for improvement are discussed. Results of the questionnaire concerning individual subjects and the composition of study programmes were used in the review of study plans during the preparation of new accreditations of study programmes. Pedagogical boards of programmes and fields hold regular sessions and assess the given study programme or field. Experts from the application sector and from other institutions are members of committees for the presentation and defence of theses.

On 2018, a working group appointed by the dean of the faculty continued in its work at **the Faculty of Mechanical Engineering**, which deals with the quality of the studies and the possibilities for enhancement. The group is led by the Vice-Dean for Education and its members include Dr. Skočilas, who coordinates the quality management of studies, Ing. Řezníčková, representing students, and Dr. Podaný, who is responsible for the preparation of the timetable and its optimization. In 2018, cooperation with CIIRC was initiated in the field of quality of education, mainly in statistical processing of large amounts of data obtained from the KOS information system. This cooperation built on previous cooperation in this area with the UK's Open University, which has a long lasting experience with quality assessment. The student questionnaire was an important part of the quality assessment also in 2018. At the end of each semester, students evaluate the lessons, the teachers' approach, the level of the exams and express their opinion on the faculty as such. On the basis of all these documents that are submitted to the faculty's dean, the dean holds interviews with relevant heads of institutes at the start of each semester. Subsequently, the heads of institutes transfer the acquired information to their workplace and possibly modify the instruction or make changes in the staff. On the basis of information acquired during lessons and from the questionnaire, some subjects were modified in 2018, especially in bachelor study, so that students have got acquainted with machine engineering as best as possible, especially those coming from multi-year grammar schools (modernization of the subject "Technology Development" continued, cooperation was developed in preparation for the subject "Career in Engineering", the content of a new subject "Introduction to ..." was prepared for a new accreditation). The aim of all these steps is both to improve the quality of instruction and to reduce the number of unsuccessful students by increasing their motivation.

The quality of education at **the Faculty of Electrical Engineering** is monitored and assessed in several aspects:

- Primarily the student questionnaire
- Inspections in classes
- Meetings with students of individual fields of study (Feedback KyR, OI grill, etc.)
- Evaluation of optional subjects.

The basic tools used to assess the quality of education are the results yielded by the student questionnaire which are carefully assessed and form the basis for raising the quality of education at FEE. Students can answer anonymously or they can disclose their identity, i.e. they can add their email address to their comments. Teachers are required to respond to students' comments. A time schedule for processing the results of the questionnaire was set (teachers, heads of departments, guarantors of study programmes and the dean comment on students' suggestions in this order). The results and the respective measures are then published. The dean gives awards to the ten best teachers according to the student questionnaire. The heads of departments had a private version of the questionnaire at their disposal (including comments by students commenting on teachers that refused to publish students' comments), together with trends in the average assessment for each teacher since the 2004-2005 academic year, an analysis of answers to frequently-asked questions and statistics of the results from courses in the winter semester. The heads of departments carried out an assessment on

the basis of a predefined structure and in two forms: a public form for publication on the website and a private form for the dean, where they inform about the measures they are taking to improve the quality of education.

The Faculty of Nuclear Sciences and Physical Engineering strives to support development of pedagogical skills of its staff. In order to do so, it uses two tools - assessment of instruction and internal competition. In addition, the best pedagogical staff are regularly rewarded from the dean's fund. At FNSPE, the assessment of instruction in the winter and summer semesters was conducted in the form of a student questionnaire via the CTU survey system. In this questionnaire, students evaluate in detail and from their perspective the level of instruction in individual subjects, respond to questions regarding the faculty in general and questions concerning PR and insert their suggestions. In this way, the questionnaire provides natural feedback to help improve the educational process.

Based on the results of the questionnaire, the Student Union at the Faculty of Nuclear Sciences and Physical Engineering CTU in Prague presents awards for outstanding pedagogical contribution – the Golden Chalk. To increase participation in the questionnaire, the Student Union conducts prize draws.

The final presentations and assessment of studio projects at **the Faculty of Architecture** are carried out with the participation of external experts. Aside from that, assessment committees comprised of external experts and randomly selected heads of studios are appointed each year, one for the 1st year studio lessons (ZAN), the other for vertical studios. These committees visit and assess all studios and the final assessments are then presented by heads of studios in teachers' rooms of ZAN and the studios and are consequently discussed and analysed. A long-term statistics of the results achieved by individual studios is kept at the faculty.

The faculty regularly organizes pedagogical conferences during which the pedagogical concepts are confronted with the knowledge and experience of teachers at the faculty. Student works are regularly confronted with international environment through competitions, Biennale, Expo, Designblok, Talent design, etc.

An important element of quality control is the participation of external members (leading architects, designers, erudite artists and other professionals) in committees for the presentation and defence of theses. Another tool of quality control is the publication of the theses, including expert opinions at https://dspace.cvut.cz.

The Faculty of Transportation Sciences carries out regular internal assessment of education on various levels. The first among them is the student questionnaire, which is launched after each semester at the beginning of the examination period; the second level is a regular internal inspection of the educational process in individual subjects carried out by the faculty institutes in the capacity of guarantors; the third level are random inspections of classes carried out by the vice-dean for education; the fourth level is verification of students' comments communicated to the vice-dean for education which concern possible breaching of the Study and Examination Code and related faculty regulations (these complaints are rather rare).

After it is concluded, the student questionnaire is evaluated and published on the faculty's intranet. The heads of institutes are immediately asked to respond to students' comments. Consequently, the positions of the institutes are discussed by the Dean's Collegium and at a session of the FTS Academic Senate. Depending to the seriousness of the cited failings and following verification of their rightfulness, the following measures are taken: consultation with the teacher, adjustment of the syllabus of the subject, replacement of the teacher as a last resort.

Heads of institutes are fully responsible for inspection of the educational process. The results and subsequent conclusions are discussed by the Dean's Gremium. Random inspections carried out by the vice-dean and verification of information concerning defects in the educational process are always discussed by the Dean's Collegium and with the responsible head of institute, who is obliged to communicate how the detected deficiencies are to be removed and above all how they will make sure that such deficiencies will not happen again.

Although the Faculty of Transportation Sciences considers the quality of education its priority and makes a lot of effort to improve the quality, minor failings are sometimes detected. They are discussed immediately with the relevant head of department and teacher. No major failings in the required standards and quality of instruction were detected in 2018.

The Faculty of Biomedical Engineering gives top priority to the quality assessment of education. In general, the system of ensuring and in particular of assessing the quality of educational activities rested on three pillars: assessments by students, by senior employees and by outside experts.

Same as every year, the student questionnaire was implemented at the faculty in the summer and winter semesters. It was organized and formally administered by students in cooperation with the vice-dean for education. In the schedule for the academic year, the date of the implementation of the student questionnaire in the winter and summer semesters is stated plus one day per semester is dedicated in each semester to a meeting between the faculty management and the students in order to assess the questionnaires. On that day, a meeting between students and guarantors of individual fields of study was organized, which aimed to identify potential problems and adopt appropriate measures to achieve the required quality of the educational process in the given field of study. The results of the student questionnaire were then used as basis for measures taken by individual teachers, guarantors of individual fields of study, heads of departments and the faculty management. Students' questions concerning individual fields of study and the relevant answers by guarantors of individual fields of study were put in writing and published. The same applied to questions for and answers by the faculty management. Feedback was also provided through a questionnaire survey among graduates which takes place on a regular basis and which is organized by the departments - guarantors of the relevant study programmes or directly in meetings with graduates. The aim is to find out whether graduates were satisfied with the studies, including how they were prepared for their future job.

The faculty keeps in touch with the graduates from individual fields/programmes and based on their comments on the content of the studies modifies the study plans and content of subjects for the newly prepared accreditations. A systematic feedback from employers is a weakness, but its implementation and optimization is now a priority. Boards of study programmes have been established, where one of their members is also a representative of employers of students of the given study programme.

Inspections were another tool to assess quality of educational activities. Inspections are carried out primarily when the student questionnaire or anomalies in the marks or in the rates of successful completion of a subject indicate that there may be a problem.

In order to detect plagiarism in the evaluation of theses the system Theses.cz was used.

The Faculty of Information Technology evaluates the quality of education on the basis of direct inspections in classes (carried out by heads of departments, the dean and the vice-dean for study affairs), checking the readiness for the upcoming semester and making accessible and complete support study materials in the moodle.fit.cvut.cz system (heads of departments). Another assessment tool is the anketa.cvut.cz application, where students are able to insert comments about subjects they studied in the previous semester. All these activities are carried out regularly each semester. The findings are processed by each department and submitted to the Dean's Gremium, which decides on the remedial measures. Detecting plagiarism is the responsibility of supervisors and reviewers of theses and projects, other works are dealt with in independent systems, such as the PROGTEST system.

At **the Masaryk Institute of the Advanced Studies**, an assessment system was implemented under the title Assessment of Academic Staff Performance at the Masaryk Institute of the Advanced Studies in Prague – Quantifiable Criteria. The assessment of the performance of each academic worker is carried out every semester, during which the results achieved in the previous 12 months are assessed.

The institute considers the quality assessment system of educational activities as one of its top priorities. The system of ensuring and, above all, assessment of the quality of the educational activity consists of three pillars: assessments by students, by managers and by outside experts.

With regard to the low return on the electronic survey, http://www.muvs.cvut.cz/anketa-cvut/, this form was modified and a printed version was introduced, which is distributed to students during classes in the course of the whole year. Results of the student questionnaire are used for measures implemented at the level of teachers, guarantors of subjects, guarantors of programmes, heads of departments and the MIAS management. Students' questions concerning individual study programmes and the relevant answers by guarantors of the study branches are put in writing. The same applies to questions for and answers by the faculty management. The results of the student questionnaire are used for selection and subsequent acknowledgement of the best teachers according to the questionnaire during meetings at individual departments, or as part of a summary report of the Gremium of the director of MIAS. Note: In the framework of preparation of a new CTU

questionnaire, MIAS got involved in the preparation of pilot testing of this innovated form.

Inspections are another tool used in quality assessment of educational activities. Relevant heads of departments or guarantors of study programmes are responsible for inspections related to the internal assessment and ensuring of quality of educational activities at MIAS. At MIAS, inspections are not formalized in an internal regulation, as a rule, they contain definitions of concepts, the aims of the inspection, the scope and responsibility, the procedure of the inspection and the inspection record. Inspections are conducted primarily when the results of the student questionnaire or an anomaly in the marks or the successful completion of a subject indicate there may be a problem. For the detection of plagiarism in the evaluation of bachelor and master theses and in accordance with Decree of the Director of MIAS No. 6/2016 on theses and state final examinations in bachelor and master study programmes at MIAS, http://www.muvs.cvut.cz/wp-content/uploads/2013/11/6-2016-.pdf, the Theses.cz system is used on the basis of a contractual relationship. The system is intended for the detection of plagiarism between theses and is developed and operated by Masaryk University. All academic staff who are supervisors of qualification theses evaluate the findings from Theses. The results are presented together with the opinions of the supervisor and reviewer of the thesis and serve as a basis for the decision taken by the committee for state final examinations.

Together with the Theses system, based on a contractual relationship, MIAS also uses the Odevzdej.cz system, which is also operated by Masaryk University and which serves for submission of seminar projects and other documents to teachers, for assessment of theses and for comments, as well as for verification of the originality of qualification or seminar theses, through so-called submission rooms.

Other rules guiding quality assurance in educational activities are stipulated in the Study and Examination Rules for Students at CTU in Prague. The publication of theses, including expert opinions in the CTU digital library (institutional repository, https://dspace.cvut.cz/) and continuous monitoring of the composition and activities of the state final examination committees are also tools of quality control. The participation of external members in state final examination committees, including employers of graduates, is yet another important element of quality control. External consultants or evaluators (often also reviewers of theses) are automatically invited to participate in the presentation and defense of theses as part of state final examinations.


10
Karel Janeček
33
ŠKODA
TEXTRONIC

10. National and international excellence at CTU

Participation in projects, associations and networks of excellence alongside leading international universities is one of the indicators of excellence at CTU. A list of activities demonstrating that CTU is a major partner of international institutions is given in this chapter. Last but not least, national and international awards also provide clear confirmation of the university's excellence.

10.1. International and outstanding national research, development and creative activity, integration of research infrastructure in international networks and CTU membership in professional and artistic networks

Organization	Country	Status
Association of Innovation Business (AIB)	Czech Republic	Member
American Institute of Aeronautics and Astronautics (AIAA)	USA	Associate member
American Society of Heating, Refrigeration and Air-Conditioning (ASHRAE)	USA	Member
American Society of Mechanical Engineering (ASME)	USA	Member

American Society for Laser Medicine and Surgery	USA	Member
Arbeitskreis für Hausforschung e. V.	Germany	Member
ASM International – Czech Chapter	International	Member
Association of Acoustics in Czech Building Industry	Czech Republic	Member
Association of Czech and Slovak Galvanisers	Czech Republic	Member
Association of Energy Managers	Czech Republic	Member
Association of Innovative Entrepreneurship (AIP)	Czech Republic	Member
Association of Adult Education Institutions in the Czech Republic (AIVD)	Czech Republic	Member
Association of Libraries of Universities of the Czech Republic (AVKŠ)	Czech Republic	Chair of Executive Board
Association of Small and Medium-Sized Enterprises and Crafts of the Czech Republic (AMSP ČR)	Czech Republic	Member
Association of Microturbines	Czech Republic	Founding member
Association of University Administration Staff (APUA)	Czech Republic	Member
Association for the Heat Treatment of Metals (ATZK)	Czech Republic	Member
Association for Urban and Regional Planning (AUÚP)	Czech Republic	Member
Metal Thermal Processing Association (AVTČ)	Czech Republic	Member
Association of Public Telecommunications Network Operators (APVTS)	Czech Republic	Member
Association of Construction Economists	Czech Republic	Member
Association of European Civil Engineering Faculties (AECEF)	Czech Republic	President of AECEF, General Secretary
Association of European Schools of Architecture (EAAE)	Belgium	Member of the Board
Association of European Schools of Planning (AESOP)	Kingdom of the Netherlands	National representative
Association of Third Age Universities of the Czech Republic	Czech Republic	Member
Association of University Educators of Non-Medical Health Care Professions	Czech Republic	Member
CACE – Czech Association of Consulting Engineers	Czech Republic	Member
Centre for Advanced Field Robotics (CAFR)	Czech Republic	Member
Centre of Excellence Cooperative Intelligent Transportation (CECIT)	USA	Member
CERN, ATLAS	Switzerland	Member of experiment, represented in the Experiment Committee
CERN, MoEDAL	Switzerland	Member of experiment

COGEN Czech – Association for Cogeneration	Czech Republic	Member
Collège International pour la Recherche en Productique – The International Academy for Production Engineering (CIRP)	France	Member
Conseil International des Grands Réseaux Électriques (CIGRE)	France	Member
COST IFER TU0904 Integrated Fire Engineering and Response	Belgium	Member, Chair
Crossref	USA	Member
CSTB (ECTP)	EU	Research organization
Czech and Slovak Association of Language Centres (CASALC)	Czech Republic	Member
Czech Nuclear Education Network (CENEN)	Czech Republic	Member
Czech Tunelling Committee ITA/AITES	Czech Republic	Member
Czech and Slovak Society for Photonics	Czech Republic	Member
Czech Association of MBA Schools (CAMBAS)	Czech Republic	Member of the Board
Czech Steel Construction Association (ČAOK)	Czech Republic	Member
Czech Association of Telecommunications	Czech Republic	Associate member
Czech Association of University Sport	Czech Republic	Member
Czech Concrete Society (ČBS)	Czech Republic	Member
Czech Management Association (ČMA)	Czech Republic	Member
Czech Marketing Association	Czech Republic	Member
Czech Mathematical Society	Czech Republic	Member
Czech National Technological Engineering Platform	Czech Republic	Member
Czech Nuclear Society	Czech Republic	Member
Czech Green Building Council	Czech Republic	Member
Czech Road Society (ČSS)	Czech Republic	Member
Czech Chemical Society	Czech Republic	Member
Czech Nuclear Medicine Society	Czech Republic	Member
Czech Society for Radiation Protection (ČSOZ)	Czech Republic	Member
Czech Society for Cybernetics and Informatics	Czech Republic	Member
Czech Society of Mechanics (ČSM)	Czech Republic	Member
Czech Society for New Materials and Technologies (ČSNMT)	Czech Republic	Member
Czech Society for Systems Integration (ČSSI)	Czech Republic	Member
Czech Sustainable Building Society (ČSUVB)	Czech Republic	Member
Czech Research Association for Sheet Metal Working	Czech Republic	Member with a deciding vote
Czech Technological Platform for Aviation and Space	Czech Republic	Member
Czech Tribology Society	Czech Republic	Member with a deciding vote

Czech Hydrogen Technology Platform HYTEP	Czech Republic	Member
Czech Chamber of Authorized Engineers and Technicians (ČKAIT)	Czech Republic	Member
Czech Moravian Electrotechnical Association	Czech Republic	Member
Czech and Slovak Galvanizers Association	Czech Republic	Member
Czechoslovak Microscopy Society	Czech Republic	Member
Czech National IMEKO Committee	Czech Republic	Member
Czech National Committee on Large Dams	Czech Republic	Member
Czech Union of Science and Technology Societies	Czech Republic	Member
Czech Association of Employers in Electrical Engineering	Czech Republic	Member
Czech Energy Employers' Union	Czech Republic	Member
Eastern European Research Reactor Initiative (EERRI)	Poland (states change)	Member
Education and Research in Computer Aided Architectural Design in Europe (eCAADe)	Belgium	Member of the board
EUCEET – faculty membership	Romania	Member
EUNIS-CZ, Interest Association of Legal Entities	Czech Republic	Member
EuRobotics (AISBL)	Belgium	Member
European Campus Card Association (ECCA)	Ireland	Member
European Committee for Standardization (CEN)	Belgium	Member
European Energy Research Alliance (EERA)	Germany	Associate member
European Federation of National Engineering Associations (FEANI)	Belgium	Member of the Executive Board
European Institute of Innovation and Technology (EIT)	France	Member
European Large Geotechnical Institute Platform (ELGIP)	Kingdom of the Netherlands	Member
European Life-Science Infrastructure for Biological Information (ELIXIR)	United Kingdom	Member
European Microbeam Analysis Society (EMAS)	Germany	Member
European Nuclear Education Network Association (ENEN)	Belgium	Member
European Platform of Transport Sciences (EPTS)	Germany	Member
European Radiation Dosimetry Group (EURADOS)	Switzerland	Member
European Spallation Source (ESS)	Sweden	Member of working group of the European research centre
European steel fabricators convention (ECCS)	Belgium	Member
European Structural Integrity Society (ESIS)	International	Member

European transport research provider for SME & industries (EURNEX)	Germany	Member
Europe's Intelligent Transportation Systém organization (ERTICO – ITS Europe)	Belgium	Member
European University Public Relations and Information Officers (EUPRIO)	Czech Republic	Member
European University Information Systems Organisation EUNIS	Czech Republic	Member of Executive Board
Federation of European HVAC Associations (REHVA)	Belgium	Member
Fusion Education Network (FUSENET)	EU (coordinator – Kingdom of the Netherlands)	Member
Geosynthetics Society	USA	Member
Gesellschaft für Aerosolforschung e.V. (GAeF)	Germany	Member
ICT Union	Czech Republic	Honorary member
IEEE – Czechoslovak section, branch of Nuclear and Plasma Sciences Society	USA	Founding member of the Czech branch
Implementing Geological Disposal of Radioactive Waste technology Platform (IGD-TP)	Sweden	Member
Informatics Europe	Switzerland	Member
Institute of Electrical and Electronics Engineers (IEEE)	USA	Member
International Association for Bridge and Structural Engineers (IABSE)	Switzerland	Member
International Association of Teachers of English as a Foreign Language (IATEFL)	Germany	Member
International Association of University Libraries (IATUL)	UK	Member
International Association with Scientific Objectives (ERCOFTAC)	Switzerland	Member
International Atomic Energy Agency – Underground Research Facilities Network (IAEA URF Net)	Austria	Member
International Building Performance Simulation Association (IBPSA)	Canada	Member
International Cartographic Association (ICA)	International	Member
International Commission on Large Dams (ICOLD)	France	Member
International Committee for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement (DOCOMOMO)	International	Member
International Council for Building Research Studies and Documentation (CIB)	Kingdom of the Netherlands	Member
International Council on Monuments and Sites (ICOMOS)	France	Member – chair of the working group for post-war architecture ČNK ICOMOS
International Energy Agency Annex 57 (IEA Annex 57)	Japan	Member

International Federation for Structural Concrete	Switzerland	Member
International Federation of Automatic Control (IFAC)	USA	Member
International Initiative for Sustainable Built Environment (iiSBE)	Canada	Member
International Institute of Refrigeration (IIR)	France	Member
International Organization for Standardization (ISO)	Poland	Member
International Society for Photogrammetry and Remote Sensing (ISPRS)	International	Member
International Society for Porous Media (Interpore)	Kingdom of the Netherlands	Member
International Society of Radiopharmaceutical Sciences	USA	Member
International Tribology Council (ITC)	UK	Member with a deciding vote
Internationale Gesellschaft für Ingenieurpaedagogik (IGIP)	Austria	Member
Interpore	USA	Member
ITA/AITES – Czech Tunnelling Association	Czech Republic	Member
ITS-EduNet	International	Member
Unity of Czech mathematicians and physicists	Czech Republic	Member
Joint Committee on Structural Safety (JCSS)	Denmark	Member
Club of Personnel Managers	Czech Republic	Member
Laboratoire Souterrain de Modane	France	Member of laboratory
Laboratoire Souterrain de Modane, SuperNEMO	France	Member of experiment, represented in the Experiment Committee
Laboratoire Souterrain de Modane, TGV	France	Founding member of experiment
Ligue des Bibliothèques Européennes de Recherche (LIBER)	Kingdom of the Netherlands	Member
MDPI – Publisher of Open Access Journal	Switzerland	Member
Medipix	Switzerland	Member of association, represented in the Executive Board
International Science Commission EHHTTA (European Historical Thermal Towns Association)	Italy	Member
Moravian-Silesian Automotive Cluster (MAK)	Czech Republic	Member
National Association for Electromobility and Support of Modern Technologies	Czech Republic	Member
National Technology platform NGV (using natural gas in vehicles)	Czech Republic	Member
Oxford Teacher's Club (Oxford University Press Publishing)	UK	Member

ORCID (Open Research and Contributor ID)	USA	Member
Partnership of a European Group of Aeronautics and Space Universities (PEGASUS)	Italy	Member of Executive Board
PICO	USA	Member of experiment, represented in the Experiment Committee
RD50 – Radiation hard semiconductor devices for very high luminosity colliders	Switzerland	Member of research association coordinated by CERN
Research Reactor Operating Group (RROG)	International	Member
SAE International, Czech Branch	USA	Member
SCOAP3 Sponsoring Consortium for Open Access Publishing in Particle Physics	Switzerland	Member
Automotive Industry Association of the Czech Republic (SAP)	Czech Republic	Member
Intelligent Transport Systems and Services of the Czech Republic (SDT)	Czech Republic	President, Member
Concrete Construction Repair Association (SSBK)	Czech Republic	Member
School of Underground Waste Storage and Disposal (ITC School)	Switzerland	Member
Smart card alliance (SCA)	USA	Member
Société Française de Métallurgie et de Matériaux	France	Member
Society for the Advancement of Materials and Process Engineering (SAMPE)	USA	Member
Ioannes Marcus Marci Spectroscopic Society	Czech Republic	Member
United Institute of Nuclear Research	Russia	Member of the Institute's Scientific Programmes
Czech Fusion Company	Czech Republic	Member
Czech Society for Photogrammetry and Remote Sensing (SFDP)	Czech Republic	Chair
Association of Machine Tools (SpOS)	Czech Republic	Member
Association of Anglicists and Germanists of the Czech Republic	Czech Republic	Member
Confederation of the Czech Aviation Industry (SČLP)	Czech Republic	Member
Electronics Industry Union	Czech Republic	Member
Association of Industry and Transport of the Czech Republic	Czech Republic	Member
Association of Engineering Technology (SST)	Czech Republic	Member
Association of Greenery Founding and Maintenance (SZÚZ)	Czech Republic	Member
World Road Association (PIARC)	France	Member
Union of Construction Trials (SZV)	Czech Republic	Member

Technology Platform for Interoperability of Railway Infrastructure	Czech Republic	Member
Technology Platform for Road Transport	Czech Republic	Member
Technology Platform on Manufacturing Engineering Technology	Czech Republic	Member
Technology Platform Vehicles for Sustainable Transport	Czech Republic	Member
TEPPE z.s.	Czech Republic	Member
Texas Institute of Science (TxIS)	USA	Member
The European Alliance for Medical and Biological Engineering and Sciences (EAMBES)	Belgium	Member
The International Association for Life-Cycle Civil Engineering (IALCCE)	Italy	Member
The International Association for the Properties of Water and Steam (IAPWS)	USA	Member
The International Association of University Libraries (IATUL)	Ireland	Member
The International Association of Vehicle System Dynamics	International	General secretary
The International Committee for Documentation of Cultural Heritage (CIPA)	International	Member
The International Committee for the Conservation of the Industrial Heritage (TICCIH)	UK	Member
The International Federation for Structural Concrete (FIB)	Switzerland	Member
The International Federation of Automotive Engineering Societies (FISITA)	UK	Member
The International Society for Air Breathing Engines (ISABE)	Australia	Member
The International Solar Energy Society (ISES)	Germany	Member
The International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM)	France	Member
The Optical Society (OSA)	USA	Member
Top Industrial Managers for Europe (T.I.M.E. Association)	Belgium	Member
Metals Science Society	Czech Republic	Member
Scientific and Technical Association for Building Rehabilitation and Monument Preservation (WTA CZ)	Czech Republic	Member
Mathematical Olympics Committee	Czech Republic	Member
Wissenschaftlich-Technische Arbeitsgemeinschaft für Bauwerkserhaltung und Denkmalpflege E.V. (WTA International)	Germany	Member
World Association for Innovative Technologies (WAIT)	Croatia	Member with a deciding vote

World Conference on Transport Research Society (WCTRS)	UK	Member
World Nuclear University	UK	Member
World Road Association (PIARC)	France	Member

Faculty of Mechanical Engineering

The Faculty of Mechanical Engineering regularly participates in international and major national research and creative activities. In 2018, it got involved in seven national centres of competence, which cover most of Czech industry. The Faculty of Mechanical Engineering is a member of a number of professional organizations and networks, such as various technology platforms, the Confederation of Industry of the Czech Republic, the Association of Small and Medium-Sized Enterprises and Crafts, etc.

Faculty of Electrical Engineering

The RVVI methodology (RIV points) is used to compare scientific performance at faculties. According to this methodology, in recent years the faculty has steadily generated about 30% of CTU's performance. In the field of prestigious publications and citations, the faculty's share in CTU's performance is significantly higher. In 2018, the faculty published 28% (2017: 29%) of all CTU articles in impacted journals; when authors' shares and impact of journals is taken into account, then according to CTU methodology, our publication performance accounts for 43% of CTU's publication performance. We received nearly 47% of converted citations of CTU (according to WoS and CTU methodology, read on 1 February 2019).

In 2018, we witnessed a steady trend in submitting new patent applications and utility model applications. In 2018, authors had seven patents and six utility models registered. A total of 13 new scientific and research outcomes were submitted for patent protection.

As part of additional activity, the faculty employees worked on contracts on research and development for industry (total numbers: 170 smaller scope contracts; 96 large scope contracts), taught in 36 courses and trainings and prepared 20 expert opinions.

Faculty of Nuclear Sciences and Physical Engineering

All FNSPE departments cooperated with a number of leading universities and scientific institutions in Europe and around the world, including CERN laboratories. The faculty is a member of the ATLAS, ALICE and AEGIS experiments and it cooperated on software for the physical experiment COMPASS. Further, FNSPE is involved in the Star experiment at the Brookhaven National Laboratory and in JET's fusion laboratory.

These contacts allowed students to become part of young dynamic collectives with exceptional professional prospects also outside the academic sector. The faculty has own fusion reactor (Tokamak) Golem for scientific and educational purposes. The Centre

of Applied Physics and Advanced Detection Systems, the Doppler Institute for Mathematical Physics and Applied Mathematics, the Czech-American research centre of particle physics BNL-CZ, and the Centre for Research of Ultra-Relativistic Nuclear Collisions operate at the faculty. A fractographic department is also part of the faculty, which holds a status of an authorized testing laboratory for Czech aviation industry and research. The faculty established cooperation with a number of international institutions, including: the Defence Academy, the University of Manchester, the University of Tennessee, STU Bratislava, TU Wien, TU Budapest, TU Aachen, KTH Stockholm, the International Atomic Energy Agency and others.

Faculty of Architecture

Tereza Vacková – awarded the International Design Association Special Prize, namely German Design Council/Rat für Formgebung Prize, Taiwan International Student Design Competition 2018.

Kristýna Mikolášková, Studio Karel (Department of Industrial Design), MILANO DESIGN WEEK, DIN – DESIGN IN Dione Lamp/exhibition/IT.

Faculty of Transportation Sciences

Since June 2018, FTS CTU has been a member of the World Road Association PIARC, namely of the PIARC Committee on Terminology.

The Department of Mechanics and Materials is involved in the excellence research project Engineering Applications of Micro-World Physics.

A FTS representative is chair of the Scientific Council of the Technology Platform for Interoperability of Railway Structure.

A FTS representative is chair of the expert group Biomechanics within the Czech Society of Mechanics.

The faculty is a member of the Czech National Committee of the international organization IMEKO, which unites institutions active in the field of measurement of physical quantities.

The faculty is also a member of ITS-EduNet, an association of major European universities and other bodies involved in education in the field of transport and intelligent transport systems (ITS). Along with our faculty, the members include Technische Universität München, the Transportation Research Group – the University of Southampton, Fachhochschule Technikum Wien, Kungliga Tekniska Högskolan (KTH) – the Department of Infrastructure, the Traffic Technical Institute (TTI) – the University of Ljubljana, the Linköping University, Politecnico di Torino, the Technical University Graz, ITS Norway and Eurecom. The association's aim is to improve education in the field of intelligent transport systems in Europe, promote ITS in general and exchange experience in this field. In 2018, this association was transformed from a registered association into a platform for informal cooperation, because it was concluded that

being a registered association in Germany did not bring any benefits, just a lot of paperwork. FTS (represented by Zuzana Bělinová) is now a member of the Steering Committee and newly also a member of the association's senior management.

FTS is a member of PEGASUS, an organization that unites the best European aerospace universities and currently has 27 members in ten different European countries such as Spain, the United Kingdom, France, Germany, Sweden and Italy. PEGASUS aims to provide highly relevant education and research programmes in order to attract the best students and scientists.

FTS is involved in the International Society for Air Breathing Engines (ISABE), which was established with the aim to exchange knowledge and skills in the field of aircraft engines. ISABE has representatives in more than 25 countries and organizes events on six continents.

Faculty of Biomedical Engineering

The Faculty of Biomedical Engineering is a member of The European Alliance for Medical and Biological Engineering and Sciences (EAMBES).

Since 2016, the faculty has been a member of the Association of University Educators of Non-Medical Health Care Professions in the Czech Republic. This membership means that the faculty can actively participate in the association's activities, get access to the findings achieved at other faculties in the Czech Republic that also implement accredited study programmes in health care and participate in changes resulting from the amendment to the Higher Education Act (Act No. 137/2016 Coll.).

Faculty of Information Technology

As part of the BigCode project, the Institute for Scalable Code Analysis (ISCA) will be established at the faculty. ISCA will be the first research centre in the Czech Republic focusing on the analysis of large-scale programme code bases on the Internet, which represent a huge knowledge potential that we are not yet able to use. The aim of the BigCode project is to analyse this basis using programming language techniques and statistical machine learning to understand the information obtained. The research part of the project is in line with ongoing research at the faculty – software and knowledge engineering, data mining, parallel calculations. The centre hopes to get support from top technological companies, like Google and Oracle, based on the BigCode research team members' international contacts

FIT has been awarded the prestigious Advanced ERC Grant Evolving Language Ecosystems within H2020. Thanks to this grant, the Programming Research Laboratory was established at FIT and in the year since the start of the project, an international research team has been assembled under the leadership of Prof. J. Vitek, which includes young researchers from five countries and cooperates with a number of major international research teams and institutions. The aim of the research under this project

is to find new efficient and automated methods to develop modern programming languages and environments (libraries, IDE, code repositories, documentation, etc.).

FIT is a member of the ELIXIR CZ consortium - a major research infrastructure in the Czech Republic and the national node of the European infrastructure for the processing of bioinformatics data ELIXIR. In particular, FIT contributes to the Interoperability platform by developing the Data Management Planning Portal and by other activities related to Data Stewardship and the European GO FAIR initiative.

Klokner Institute

KI cooperated with foreign institutions on research activities within grants as well as outside grants. KI participated in COST events in Europe. The institute cooperated with prestigious universities (TU Delft, ETH Zürich, Politecnico di Torino, TU Lyngby, TU Munich) and leading research centres (Lafarge Holcim, TNO Delft) and with the GAČR (Centre of Excellence) and TAČR (Centre of Competence) centres. The institute became a member of the National Centre for Energy Engineering, a consortium supported by TAČR and a number of partners from industry.

University Centre for Energy Efficient Buildings

UCEEB closely cooperates with its German partners within the Netzwerk Effizienzhaus Plus network, which promotes highly energy efficient buildings. We are involved in COST events in Europe. In 2018, we successfully completed MORE-CONNECT, an H2020 project. Employees at UCEEB regularly publish articles in international journals and participate in specialized conferences. UCEEB also organizes joint seminars with leading reseach institutions (KU Leuven, TU Delft, DTU, TU Innsbruck, Fraunhofer IBP, Fraunhofer WKI and others).

Czech Institute of Informatics, Robotics and Cybernetics

PRAIRIE – PaRis Artificial Intelligence Research Institute

Its founding members include three academic institutions: Inria, CNRS and PSL University, together with companies Amazon, Criteo, Facebook, Faurecia, Google, Microsoft, NAVER LABS, Nokia Bell Labs, PSA Group, SUEZ and Valeo.

On the international level, the PRAIRIE Institute will use the network of top AI centres around the world. The Czech Institute of Informatics, Robotics and Cybernetics will become one of its partners.

CIIRC has already established cooperation with the Inria institute, one of PRAIRIE's founding members, on the project IMPACT (Intelligent Machine Perception), led by Dr. Josef Šivic. IMPACT is an association of researchers from Inria and CIIRC and its aim is to push forward the boundaries of current level of knowledge in the field of machine learning, computer vision and robotics.

10.2. National and international awards at CTU in 2018

Faculty of Civil Engineering

Prof. Ing. František Wald, CSc., head of the Department of Steel and Timber Structures

Award: Charles Massonnet Award

The award of the European Convention of Constructional Steelwork (ECCS) is given as recognition to scientists who have significantly contributed to the development of scientific and technical knowledge in the field of constructional steel structures.

Prof. Ing. František Wald, CSc., head of the Department of Steel and Timber Structures

And Ing. Marek Pokorný, Ph.D., assistant professor at the Department of Building Structures

Award: A medal of the Fire Rescue Service of the Czech Republic commemorating the 100 years of Czech statehood. The laureates have contributed to the development of the Fire Rescue Service of the Czech Republic and have supported and helped it as part of their professional activities.

Prof. Ing. František Wald, CSc., head of the Department of Steel and Timber Structures

Award: Česká hlava (Czech Brains) prize

The CBFEM project Design of Steel Connections Using Component-based Finite Element Method of Brno-based IDEA StatiCa, s. r. o., won the Česká Hlava Prize awarded by the Ministry of Industry and Trade of the Czech Republic.

Ing. arch. Alžběta Vachelová, doctoral student of the study programme in Architecture and Building Engineering

Award: Award of the Ministry of Education, Youth and Sports

The award is given to students for an exceptional act. Alžběta founded a project called "Sign Up to Change Lives!" (Zapiště se někomu do života), in which students can register as donors of bone marrow.

Faculty of Mechanical Engineering

On 3 July 2018, doc. RNDr. Vojtěch Petráček, CSc., Rector of the Czech Technical University in Prague, and Dr. Chunhong Park, President of the Korea Institute of Machinery and Materials (KIMM), signed a Memorandum of Understanding – MoU. The memorandum was initiated by KIMM as an expression of their will to enhance cooperation with CTU in Prague as a whole, based on successful implementation of

previous projects undertaken by KIMM in cooperation with CTU in Prague, Faculty of Mechanical Engineering, Ú12135.

In September 2018, prof. Pavel Ditl, DrSc., was awarded the EFCE Personal Recognition Award in Mixing 2018 given by the Mixing working group of the European Federation of Chemical Engineering as recognition of his long-lasting excellent work and contribution to the working group.

In 2018, the international project INNOWATREAT (focused on the development of an innovative system for coke oven wastewater treatment and water recovery with the use of clean technologies) led by prof. Pavel Ditl and financed by the Research Fund for Steel and Coal of the European Commission was implemented. The project's consortium is headed by Instytut Chemicznej Przeróbki Węgla (Poland). Other members, aside from the Faculty of Mechanical Engineering, include Politechnika Wrocławska and Politechnika Krakowska (Poland) and an industry partner, Akvola Technologies GmbH (Germany). During the last annual presentation of results, partners acknowledged the innovative design of the electrocoagulation reactor of operating size for industrial implementation.

In 2018, prof. Ing. Jiří Bašta, Ph.D.; prof. Ing. František Drkal, CSc.; Ing. Miloš Lain, Ph.D.; doc. Ing. Tomáš Matuška, Ph.D.; doc. Ing. Richard Nový, CSc.; and doc. Ing. Vladimír Zmrhal, Ph.D., were awarded the plaque for significant contribution to the field of Technology of the Environment at the Green Way symposium.

In the latest QS World University Rankings in the field "Mechanical, Aeronautical & Manufacturing Engineering", the Faculty of Mechanical Engineering, CTU in Prague, ranked as the best in the Czech Republic.

Faculty of Electrical Engineering

Employees and students at FEE received a number of prestigious awards; for instance, our student Lukáš Neumann won the Česká Hlava Prize. He invented a method that combines machine learning and a new algorithm for searching for letters regardless of orientation and size.

Faculty of Nuclear Sciences and Physical Engineering

Crytur Prize

1st-2nd place: Ing. Kateřina Tomanová, Synthesis of the Luminiscent Core-shell Materials

Dean's Award - Nuvia 2018

1st place: Jan Nikl, Some Aspects of Numerical Methods for Laser Plasma Hydrodynamics

2nd place: Ing. Martin Dudr, Characterisation of High Entropy Alloy Prepared by SPS Method

3rd place: Ing. Radek Galabov, Analysis of Errors during Blood Velocity and Flow Measurement Using Magnetic Resonance: The Influence of Sequence Parameters, Technical Limits and Flow Characteristics

Preciosa Foundation Award

Best dissertation thesis

Ing. Pavel Bláha, Ph.D., Induction of HPRT Mutations in Mammalian Cells after Exposure to Heavy Ions

Rektorys's competition in Applied Mathematics

1st place: Ing. Pavel Eichler, Mathematical Modelling of the Interaction between an Elastic Body with an Incompressible Fluid

2nd place: Bc. Jana Lepšová, Reaction-Diffusion Equations in Electrocardiology

2nd place: Ing. Aleš Wodeci, Mathematical Modelling and Numerical Simulation of Microstructure Evolution During Phase Transition

3rd place: Ing. Petr Gális, Geodetic Localization of Acoustic Emission Sources and Preparation of Localization Maps

Czech-Slovak Student Scientific Conference in Physics

1st place in the category "Nuclear Physics and Elementary Particle Physics": Ing. Dagmar Bendová, Study of Hadron Structure within Quantum Chromodynamics (master thesis)

1st place in the category "Condensed-Matter Physics": Ing. František Hájek, Luminiscence InGaN/GaN and InGaN/InGaN in Scintillation Heterostructures

2nd place in the category "Theoretical Physics, Biophysics and Physics of Molecular Systems": Ing. Martin Malý, Structure Analysis of Oxidase: Ligand Complexes

3rd place in the category "Theoretical Physics, Biophysics and Physics of Molecular Systems": Ing. Patrik Urban, Physical Aspects of Conformal Gravity

Competition of university students in scientific activities in mathematics and informatics

2nd place in the category "Mathematical Analysis"

Ing. Marie Fialová, Two-dimensional Dirac Operator with Translationally Invariant Magnetic Field

2nd place in the category "Mathematical Analysis": Ing. Kateřina Zahradová, Spectral Analysis of Quantum Nanoribbons

2nd place in the category "Mathematical Modelling of Dynamical Systems – Analysis": Ing. Zuzana Szabová, Theory of Balanced Densities and Detection of Interaction Range in Vehicular Traffic

International Atomic Energy Agency (IAEA)

Ing. Ondřej Novák, IAEA fellowship

Ing. Jan Frýbort, Ph.D., IAEA fellowship

Ing. Lenka Frýbortová, Ph.D., IAEA fellowship

Awards from conferences

Ing. Pavel Suk – the best paper in the section "Modelling and Simulation" at the Šimáně 2018 conference for a paper titled "Advanced Homogenization Models for Pressurized Water Reactors"

Ing. Martin Ševeček – Early Career Award at The Nuclear Materials Conference – NuMat2018 (Seattle, USA), where he presented his work titled "Fatigue Behavior of Cold Spray-coated Accident Tolerant Cladding"

Other awards

RNDr. Ing. Petr Distler, Ph.D., Becquerel Prize for Nuclear 2018 (1st place) awarded by the French Embassy in the Czech Republic for outstanding research results in nuclear disciplines

Ing. Petra Suchánková, Becquerel Prize for Nuclear 2018 (2nd place) awarded by the French Embassy in the Czech Republic for outstanding research results in nuclear disciplines

Ing. Anna Michaelidesová, Becquerel Prize for Nuclear 2018 (3rd place) awarded by the French Embassy in the Czech Republic for outstanding research results in nuclear disciplines

Ing. Kseniya Popovich, competition for best work by young authors in spectroscopy (3rd place) – awarded by the Ioannes Marcus Marci Spectroscopic Society for the publication "LuAG:Pr3+ - Porphyrin Based Nanohybrid System for Singlet Oxygen Production: Toward the Next Generation of PDTX Drugs"

Ing. Ondřej Novák – Fulbright-Masaryk scholarship for scientific workers who are excellent specialist in their field while at the same time they are also active in civil or public life in their institutions or communities

David Ryzák (Grammar School Trutnov), High School Professional Activity (2nd place in national round) with his work titled "Antipalindromes", which he wrote under the supervision of doc. Ing. Lubomíra Dvořáková, Ph.D.

Awards given to employees

Prof. Ing. Tomáš Čechák, CSc., CTU first-class medal

FNSPE CTU first-class medal: RNDr. Lenka Thinová, Ph.D.; FNSPE CTU second-class medal: RNDr. Ing. Petr Distler, Ph.D. et Ph.D., Rector's Prize for outstanding dissertation thesis "Study of Extraction Systems for Separation of Lanthanoids and Minority Actinoids"

Faculty of Architecture

- P. Hájek – Architect of the Year 2018 (09/2018) prize
- Prof. Roman Koucký – CTU Felber Medal – Gold Medal (for contribution to the development of CTU)
- Roman Koucký and the Metropolitan Plan team (IPR Prague) – Award for an extraordinary deed within the Czech Architecture Award 2018
- Doc. Karel Fořtl – CTU first-class medal
- Prof. Michal Kohout – FA CTU medal for significant contribution to the development of the faculty
- Jože Plečnik Award for life-long contribution to architecture and construction engineering, awarded on 1 October 2018 – doc. Zbyšek Stýblo, prof. Arnošt Navrátil, and at FA: prof. Ladislav Lábus, prof. Vladimír Krátký, prof. Václav Girsa, prof. Zdeněk Zavřel, prof. Petr Ulrich, prof. Miloslav Pavlík, doc. Zdeněk Kutnar
- Ing. arch. Karolína Kripnerová (doctoral student under D. Hlaváček) was given the Stanislav Hanzl Prize in 2018. She focuses on the subject of homelessness and architecture, both in her studies and in her free time; she is a co-founder of the non-profit Architects without Borders
- L. Lábus – Jože Plečnik Award for life-long contribution to architecture and construction engineering (10/2018)
- V. Krátký – Jože Plečnik Award for life-long contribution to architecture and construction engineering (10/2018)
- V. Krátký – GDA 2019 – GERMAN DESIGN AWARD – Special Mention, Frankfurt (11/2018)
- D. Kraus – Czech Architecture Award 2018 for the administrative building in Strančice (11/18)
- D. Kraus – Czech Architects Grand Prix Award – National Award for Architecture, award for new construction: administrative building in Strančice (11/18)
- M. Tichý – Finalist of the Czech Architects Grand Prix Award for renovation and reconstruction of the Na Zábradlí Theatre (11/18)
- Tereza Vacková – prize in the category International Design Association Special Prize, namely German Design Council/Rat für Formgebung Prize, Taiwan International Student Design Competition 2018
- Petr Matoušů – special award of the chair of the jury, Jan Činčera (Department of Industrial Design), international competition of packaging design Young Package 2018
- Lucie Koudelková – award in the category "Design of Furniture" – theses (Department of Industrial Design), Prof. Jindřich Halabala Award 2018

- Kristýna Mikolášková, Studio Karel (Department of Industrial Design), MILANO DESIGN WEEK, DIN – DESIGN IN Dione Lamp/exhibition/IT

Faculty of Transportation Sciences

In 2018, several students, whose theses were of exceptional quality, were awarded.

On 14 June 2018, contestants in the competition 15th annual "Czech Road Construction, Technology, Innovation of the Year 2018" were awarded at the Gala Evening at the Betlémská Chapel. At this occasion also students of technical universities received prizes in the annual competition for best bachelor and master theses, best year project in the field of transportation sciences and transportation construction.

Dean's Award – Ing. Kateřina Mašínová: Relocating Vídeňská Street in Prague

SUDOP GROUP, a. s., Award – Ing. Tomáš Hoření: Solution of Railway Connection Kralupy nad Vltavou - Václav Havel Airport Prague

AŽD Praha, s. r. o., Award – Bc. Valeriya Bashkirtseva: Reconstruction of the Railway Station Železný Brod

M – Silnice, a. s., Award – Ing. Markéta Habalová: Arrangement of the Transport Organization in Front of the Station Jihlava Město

As part of the Česká silniční společnost, z. s., Award for best dissertation thesis, student Ing. Jiří Hanzl won the 3rd place with his thesis "Proposal of Alternative Routes for Main Roads in case of Extraordinary and Planned Traffic Restrictions"

Faculty of Biomedical Engineering

On 10 May, the 22st edition of the Student Scientific Conference POSTER took place, organized by FEE in cooperation with FBME and FIT. A FBME representative in the competition, a student of follow-up study programme "Biomedical Engineer", Bc. Leoš Tejkl, with co-author Ing. Veronika Huttová, won the 1st place in the section "Biomedical Engineering" for a paper titled "The Effect of Change of Inspired Oxygen Fraction upon Peripheral Oxygen Saturation in Premature Infant: A Mathematical Model Enhancement".

Ing. Anna Miltová, a doctoral student at the Department of Biomedical Technology and member of the Unconventional Ventilation Team, received a major research award for the design and verification of a method of spirometric examination using electrical impedance tomography. She was awarded the prize for the best paper at the Young Biomedical Engineers and Researchers Conference 2018 (YBERC 2018) in Košice, Slovakia. This is yet another award that the members of the Unconventional Ventilation Team have received for their research activities in the field of electrical impedance tomography as a non-invasive and safe monitoring technique with an expected widespread application in respiratory care.

On 10-17 September, the 13th World Fire Fighters Games were held in the Chungju, South Korea. The Czech Republic was represented by twelve selected fire fighters. For

the majority of them, the TFA competition was a priority, in which the Czech fire fighters together with excellently prepared Koreans took all the top places. Our faculty was represented by Dušan Plodr, a 2nd year student of the bachelor study programme in Planning and Management of Crisis Situations and a fire fighter by profession working in Beroun. He came 30th in the TFA competition and after a very good finish he won a bronze medal in the 10km run.

On 21-23 September, a professional competition under the title "Inter Vitam et Exitum 2018" was held in Pardubice, in which teams from all health care study fields could enrol – primarily students of the fields Medical Rescuer, General Medicine or General Nurses, or graduates with up to 1 year of practice. Václav Rozum, a 3rd-year student of the bachelor study programme "Medical Rescuer" won an excellent 3rd place in this demanding competition. He placed on the podium despite the tough competition of students and colleagues who had already graduated and had some practical experience.

On 28 October, Bc. Karel Dušek, a student of the follow-up master study programme in Civil Emergency Planning, took part in the Xterra World Triathlon Championship. The race was held in Hawaii, on the island of Maui. The race featured a 1.5 km open ocean swim, a 32 km mountain bike course and a 10.6 trail run. Karel Dušek became world champion in the under 24 category and he won the 10th place among professionals.

Nikola Jůzová, a student of the bachelor study programme in Planning and Management of Crisis Situations, won five gold medals at the Unified World Championship WTKA Italy. The championship took place in Italy from 30 October to 5 November and Nikola Jůzová won in the following categories: Shotokan Individual, Shotokan Team, All Karate Style, Hard Style Individual, Hard Style Team.

On the occasion of the national holiday on 17 November, the Foundation of Josef, Marie and Zdeňka Hlávka handed out awards to academicians. The ceremony at the chateau in Lužany near Přeštice held on 16 November was also attended by students of Prague universities, Brno University of Technology and young talented scientists at the Czech Academy of Sciences. The Josef Hlávka Award was awarded to Bc. Barbora Balcarová, a graduate of the bachelor study programme "Biomedical Technician" at FBME.

On 17 November, the awards ceremony of the Stanislav Hanzl CTU Endowment Fund took place. The aim of the endowment fund is to support talented students of study programs accredited at the faculties and university institutes of the Czech Technical University in Prague. Mgr. Slávka Vítečková, a doctoral student of the study field Biomedical and Clinical Technology at FBME, was among the awarded individuals.

On 19 December, the results of the competition for the best athlete of the Czech Technical University were announced at the Betlémská Chapel. The first place went to Ing. Vít Přindiš, a doctoral student at the Department of Biomedical Technology. Vít Přindiš competes in water slalom. He finished 3rd in the team competition and 7th in the individual race in the K1 discipline at the World Championship in Rio de Janeiro; he also won the 2nd place in the individual race at the European championship in Prague, the 1st place in team competition in the European championship in Prague, the overall 3rd place in World Cup ranking, the 1st place in the Czech Cup and the 1st place in the

Czech Academic Games. The 3rd place went to Matouš Kasal, a student of the study field "Systematic Integration of Processes in Health Service" at FBME and a softball player. He won the 1st place at the European championship in Havlíčkův Brod, where he hit the winning home run. His team also won the 4th place at the Intercontinental Cup in Prague.

Faculty of Information Technology

RNDr. Tomáš Valla, Ph.D., assistant professor at the Department of Theoretical Computer Science, received the Jaroslav Jirsa Award for the "Best Textbook of the Year in the Natural Sciences and Mathematical & Physical Sciences" for his publication "A Guide to the Labyrinth of Algorithms".

Ing. Pavel Benáček, Ph.D., was a finalist in the national competition of the Antonín Svoboda Prize for the best dissertation thesis in computer science or cybernetics. The title of the thesis was "Generation of High-speed Network Device from High-level Description".

Ing. Filip Kodýtek from the Department of Information Security won the Josef Hlávka Award. The award is given to talented students in bachelor, master or doctoral study programmes who have demonstrated exceptional skills and creative thinking in their field.

Petr Soch, a student of FIT CTU, won the Stanislav Hanzl Award.

FIT students (Marián Hlaváč, Lukáš Brchl, Yevhen Kuzmovych and Adam Čtverák) won the international competition Space Application Hackathon in the category NAVIGATION. They invented a mobile application that allows to track the location of drones and thus avoid prohibited or restricted airspace.

FIT students (Lukáš Brchl, Marián Hlaváč, Jakub Novák, Maksym Balatsko, Yevhen Kuzmovych) won the international competition THE FUTURE OF IOT HACKATHON 2018 with a prototype of a UNIQUAM device, an independent camera that performs basic image analysis algorithms using embedded computing hardware.

Bc. Petr Lorenc, a student of FIT CTU, was a member of the Alquist team, which won the 2nd place in the finals of the prestigious Amazon Alexa Prize competition for the best conversational artificial intelligence.

Bc. Andrea Holoubková, a student of FIT CTU, made it to the finals of the Czechitas Thesis Award 2018 for the best girl's bachelor thesis in IT. Her thesis was titled "Survey and Example of Trusted Platform".

Klokner Institute

In 2018, KI did not receive any awards.

Masaryk Institute of Advanced Studies

In 2018, MIAS did not receive any awards.

Institute of Physical Education and Sport

In 2018, ÚTVS did not receive any awards.

University Centre for Energy Efficient Buildings

In the building of the National Archives in Prague, the director general of the Fire Rescue Service of the Czech Republic awarded medals commemorating the 100 years of Czechoslovak statehood. Commemorative medals were given to selected members and employees of the Fire Rescue Service of the Czech Republic, who have consistently performed their assigned tasks beyond their duties and to a number of individuals from the public and private sectors who contributed to the development of the Fire Rescue Service and who support and help the Fire Rescue Service in their work, including also Ing. Marek Pokorný, Ph.D., at UCEEB.

Ing. Marek Pokorný, Ph.D., received a commemorative medal and a diploma for his long-lasting cooperation and contribution to the activities of the Professional Chamber of Fire Protection (PKPO) at the 8th edition of the specialized conference "Fire Safety of Buildings PKPO 2018".

Ing. Tomáš Vlach, a UCEEB employee, came first in the evaluation of doctoral students at the Faculty of Civil Engineering CTU.

Doc. Ing. Tomáš Matuška, Ph.D., won the Best Poster Award at the Eurosun 2018 International Conference for his poster under the title Development of Solar Assisted Sorption Unit for Extraction of Water from Ambient Air in Desert Climate.

Ing. Miloš Lain, Ph.D.; doc. Ing. Tomáš Matuška, Ph.D.; doc. Ing. Vladimír Zmrhal, Ph.D., were awarded the plaque for significant contribution to the field of Technology of Environment at the Green Way symposium.

The interior environment quality sensor IAQ 03 and the WMR 04 technology for distance reading of water meters, developed by experts from the University Centre for Energy Efficient Buildings in the laboratories in Buštěhrad, received certification in 2018 by the Czech Radiocommunications for operation in the LoRaWAN network. The IAQ 03 sensor is unique in that it is one of the few devices that monitor several parameters of the interior environment simultaneously.

Czech Institute of Informatics, Robotics and Cybernetics

Saburo Tsuji Paper Award

James Pritts, Zuzana Kukelová and Ondřej Chum received the Saburo Tsuji Paper Award at the 14th Asian Conference on Computer Vision (ACCV) for their paper entitled "Rectification from Radially Distorted Scales".

World Championship for Automated Theorem Proving 2018

On 13-14 July 2018, the World Championship for Automated Theorem Proving 2018 (CASC-J9) was held at the Federated Logic Conference (FLoC18) in Oxford. The competition was in its 23rd year; it has been held annually since 1996. Over twenty systems from teams from the USA, Asia and Europe competed in six divisions.

In two divisions, systems developed by the CIIRC team working on the ERC project AI4REASON of Dr. Josef Urban and his colleagues won the 1st place. In the LTB (Large Theory Batch) division, the winner was the "Machine Learner for Automated Reasoning" (MaLARea 0.6) system developed by Dr. Urban and colleagues. In the THF (higher-order) division, the 1st place went to the Satallax 3.2 system developed by Dr. Chad Brown and colleagues.

Amazon Alexa Prize Award 2018

The Alquist team composed of CTU students led by Ing. Jan Šedivý, CSc., won the 2nd place in the finals of the prestigious Amazon Alexa Prize competition, whose aim is to develop conversational artificial intelligence. The team defended 2nd place which it won in 2017 also in 2018 and became the only team from a non-English speaking country in the competition finals.

The Alquist team also won the Czech AI AWARDS 2018, organized by the Economia media group and the AI Startup Incubator. The award aims to highlight the achievements in artificial intelligence. The Alquist team won in the Project of the Year 2018 category.

F1/10 Autonomous Racing Competition

A student team from the Department of Industrial Informatics led by prof. Dr. Ing. Zdeněk Hanzálek won the 1st place in the F1/10 International Autonomous Racing Competition in Porto, Portugal, in April 2018 and came 3rd in the same competition in Turin, Italy, in September 2018. The Autonomous Racing Competition is organized by the University of Virginia, the University of Pennsylvania and Università degli studi di Modena e Reggio Emilia.

Manager of the Year 2018

Prof. Ing. Vladimír Mařík, DrSc., dr. h. c., Scientific Director at CIIRC, was presented the prestigious Manager of the Year Award 2018 announced by the Czech Management Association. He received the award on 25 April 2019. In addition to winning in the main category - Manager of the Year - he also received the Smart Manager of the Year 2018 award.

Institute of Experimental and Applied Physics

In 2018, IEAP did not receive any awards.

10.3. International assessment of the university or of a part of the university, including international accreditations

In the latest QS World University Rankings CTU as a whole was once again ranked among top 500 universities in the world from among the total of 22,000 ranked universities. This means a move upwards of 40 places in the rankings, which is the best ever improvement achieved by the university.

Faculty of Civil Engineering

The Faculty of Civil Engineering ranked between the 101st and 150th positions in the QS World University Rankings in Civil and Structural Engineering.

No international accreditation was carried out at FCE in 2018.

Faculty of Mechanical Engineering

No assessment or international accreditation was carried out at FME in 2018.

Faculty of Electrical Engineering

It is primarily thanks to our faculty that CTU ranked between the 150th and 200th place in the QS World University Rankings in Computer Science and in Electrical Engineering.

Faculty of Nuclear Sciences and Physical Engineering

No assessment or international accreditation was carried out at FNSPE in 2018.

Faculty of Architecture

No assessment or international accreditation was carried out at FA in 2018.

Faculty of Transportation Sciences

No assessment or international accreditation was carried out at FTS in 2018.

Faculty of Biomedical Engineering

No assessment or international accreditation was carried out at FBME in 2018.

Faculty of Information Technology

No assessment or international accreditation was carried out at FIT in 2018.

Klokner Institute

No assessment or international accreditation was carried out at KI in 2018.

Masaryk Institute of Advanced Studies

No assessment or international accreditation was carried out at MIAS in 2018.

Institute of Physical Education and Sport

No assessment or international accreditation was carried out at ÚTVS in 2018.

University Centre for Energy Efficient Buildings

No assessment or international accreditation was carried out at UCEEB in 2018.

Czech Institute of Informatics, Robotics and Cybernetics

No assessment or international accreditation was carried out at CIIRC in 2018.

Institute of Experimental and Applied Physics

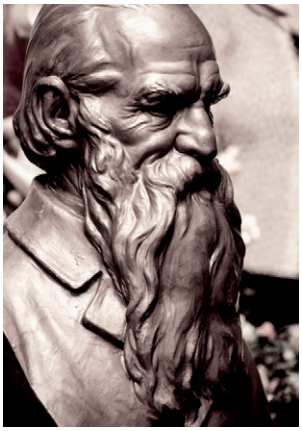
No assessment or international accreditation was carried out at IEAP in 2018.

The Česká Hlava Prize was awarded to Ing. Lukáš Neumann, a doctoral student at the Faculty of Electrical Engineering, who invented a method that combines machine learning and a new algorithm for searching for letters regardless of orientation and size. Lukáš Neumann currently works at Oxford University, where he researches AI algorithms for self-driving cars.

Prof. Ing. František Wald, CSc., head of the Department of Steel and Timber Structures, Faculty of Civil Engineering, is a recipient of multiple prizes: the Charles Massonnet Award (given as recognition to scientists who have significantly contributed to the development of scientific and technical knowledge in the field of constructional steel structures), the Medal of the Fire Rescue Service of the Czech Republic, and the Česká Hlava Prize.

Members of the Faculty of Mechanical Engineering were presented Awards at the gala evening of the GREEN WAY conference. As part of the celebrations marking the 100th anniversary of the foundation of Czechoslovakia and the 25th anniversary of the establishment of independent Czech Republic, the Society for Technology of the Environment issued plaques for significant contribution to the field of technology. The plaques were awarded based on recommendations of the specialized sections and the headquarters of the Society for Technology of the Environment.

Students at the Faculty of Information Technology, Marián Hlaváč, Lukáš Brchl, Evgeniy Kuzmovych and Adam Čtverák, won the international competition Space Application Hackathon in the category NAVIGATION. They invented a mobile application that allows to track the location of drones and thus avoid prohibited or restricted airspace.



On the occasion of the national holiday on 17 November, the Foundation of Josef, Marie and Zdeňka Hlávka hands out awards to outstanding academicians. On 16 November 2018, also eight representatives of CTU received the Josef Hlávka Award at the chateau in Lužany near Přeštice:

Ing. Petra Hájková, FCE
Ing. Filip Černík, FME
Ing. Petr Chvojka, Ph.D., FEE
Ing. Pavel Eichler, FNSPE
Ing. arch. Filip Galko, FA
Ing. Lenka Hanáková, FTS
Bc. Barbora Balcarová, FBME
Ing. Filip Kodýtek, FIT

Ing. Vít Přindiš, a doctoral student at the Department of Biomedical Technology, Faculty of Biomedical Engineering, was announced as the best athlete at CTU on 19 December in the Betlémská Chapel. Vít Přindiš is a top international athlete, who finished 3rd in the team competition and 7th in the individual race in the K1 discipline at the World Championship in Rio de Janeiro; he also won the 2nd place in the individual race at the European championship in Prague, the 1st place in team competition in the European championship in Prague, the overall 3rd place in World Cup ranking, the 1st place in the Czech Cup and the 1st place in the Czech Academic Games.

A bronze medal for a FBME student. On 10–17 September, the city of Chungju, South Korea, hosted the 13th World Fire Fighters Games. The Czech Republic was represented by twelve selected fire fighters. For the majority of them, the TFA competition was a priority, in which the Czech fire fighters together with excellently prepared Koreans took all the top places. The Faculty of Biomedical Engineering was represented by Dušan Plodr, a 2nd year student of the bachelor study programme in Planning and Management of Crisis Situations and a fire fighter by profession working in Beroun. He came 30th in the TFA competition and after a very good finish he won a bronze medal in the 10km run.

On 28 October, Bc. Karel Dušek, a student of the follow-up master study programme in Civil Emergency Planning, Faculty of Biomedical Engineering, became world champion in the under 24 category and he won the 10th place among professionals. The Xterra World Triathlon Championship was held in Hawaii, on the island of Maui, and featured a 1.5 km open ocean swim, a 32 km mountain bike course and a 10.6 trail run.

Nikola Jůzová, a student of the bachelor study programme in Planning and Management of Crisis Situations, Faculty of Biomedical Engineering, won five gold medals at the Unified World Championship WTKA Italy (30 October to 5 November). Nikola Jůzová won in the following categories: Shotokan Individual, Shotokan Team, All Karate Style, Hard Style Individual, Hard Style Team.


B BRAUN
Honeywell
2
1200 m

11. Third role of the university

11.1. Assessment of transfer of knowledge from CTU to practice (technology transfer centres, spin-off/start-up companies, incubators) in 2018

In 2018, CTU launched its business incubator InQbay. Its aim is primarily the commercialization of innovative projects and education in the field of business skills. The incubator offers modern co-working spaces with a range of amenities and technical equipment. In addition to promising business entities, the CTU incubator focused on support of innovative projects of students and employees at CTU in 2018. InQbay's primary focus was on cooperation with start-up companies that are linked to CTU, either by being set up by CTU graduates or by commercialization of technologies that had originated at CTU. By the end of 2018, six start-up companies were part of InQbay; another 10 start-ups were involved in support educational and mentoring programmes at InQbay.

In 2018, the Department of Project Management and Technology Transfer continued to implement a systematic central administration and registration of intellectual property and support commercialization of technologies and knowhow created at CTU.

In the framework of cooperation with Israel, an acceleration programme CIPA was launched, which facilitates the adoption of problems defined by the industry by international student teams under the supervision of commercialization specialists from Israel and the Czech Republic acting as mentors. Another new type of knowhow transfer

is a close cooperation with the PATRIC incubator. Using once again the experience from Israel, cooperation is set up with an external entity and university knowhow is matched with private capital.

11.2. CTU activities in the region

The Faculty of Civil Engineering activities go beyond the the borders of regions; however, their main focus is on Prague and Central Bohemia. It cooperates with state administration and commercial firms primarily in the framework of scientific projects. A strong regional bond was created by the establishment and operation of the Josef Underground Educational Facility (UEF) in Mokrsko, and the dominant participation in the University Centre for Energy Efficient Buildings (UCEEB) in Buštěhrad, near Kladno. In case of both enterprises, cooperation with the regional administration was very helpful and mutually profitable. In case of UCEEB, a team of faculty workers is involved in concrete cooperation with the regional administration bodies of the towns of Buštěhrad and Kladno, in particular in the field of expert consultations in the framework of investment construction projects. UCEEB is expected to contribute to the development of human resources in the Kladno region due to its requirement for skilled personnel.

The Faculty of Mechanical Engineering has a great reputation in the Czech Republic for the quality of its graduates and has occupied the first place in polls among employers. In Prague and Central Bohemia, the faculty actively cooperates with the state administration, health care centres, other universities and industrial enterprises in the framework of science and research projects. The faculty further develops its activities in the Central Bohemian Region (UCEEB Buštěhrad and the Centre of Vehicles for Sustainable Mobility CVUM Roztoky). Aside from that, since 2017 the Faculty of Mechanical Engineering has established centres for aircraft engine testing at VZLU, Prague 9 – Letňany and in Hradec Králové.

The Faculty of Electrical Engineering trains university educated experts in the field of electrical engineering who find employment not only in the Czech Republic, but also abroad. The faculty organizes a number of promotional events with the aim to advertise technical education in the region. The examples include the Science Festival 2018, the Night of Scientists 2018 and the FEE Fest 2018. As part of additional activity, FEE staff work on contracts on research and development for industry. Other activities include courses and trainings for professional public and writing expert opinions. The faculty cooperates with dozens of leading companies in the industry. Joint research laboratories funded by CRRC, Electrolux and Red Hat operate at the faculty.

At its study centre in the Ústí nad Labem Region (Děčín), **the Faculty of Nuclear Sciences and Physical Engineering** organizes regular classes, carries out research projects and other activities. In the 2017-2018 academic year, the centre offered full-time and part-time bachelor study programmes. The centre also participated in execution of national and international educational projects, processing of expert studies and carried out independent activities, with significant involvement of students. FNSPE cooperates with

a number of institutions also in other regions (e.g. the Plzeň Region, the Liberec Region, the Central Bohemian Region, etc.).

The Faculty of Transportation Sciences organizes lessons outside Prague, namely at its detached department in Děčín. The Děčín department offers full-time and part-time bachelor study programmes and a part-time follow-up master study programme. The Děčín department does not carry out any research activities; aside from instruction it develops cooperation with companies and public institutions in the field of solution of specific transportation engineering problems. The department has been cooperating with Czech partners in the region as well as with German partners in Saxony.

In line with the aims stated in its long-term development plan, **the Faculty of Biomedical Engineering** systematically extends social and professional cooperation with the Kladno and Central Bohemian regions as well as developing connections with the companies and customers in the region. Regular internships and excursions of FBME students to public administration organizations, health care centres and professional associations within the Central Bohemian Region are an integral part of this cooperation. Following the completion and inauguration of the University Centre for Energy Efficient Buildings in Buštěhrad near Kladno in 2014, the faculty managed to get involved in projects that bring together specialists in various fields that have close links to the solution of issues concerning the approach to energy savings.

Being the only faculty of a public university in the Central Bohemian Region, FBME highly values cooperation with the Central Bohemian and Kladno regions. From a strategic and conceptual perspective, Statutory City of Kladno is FBME's major partner in the region, with whom it cooperates on issues concerning the development of both the city and the factulty, and on organization of joint expert and social events. We must emphasize that the presence of FBME in Kladno increases the importance and prestige of the city as a regional centre of culture and education and has an impact on improving the city's image, the economy of both the city and the region and its attractiveness for housing, and positively affects its demographic development. The faculty welcomes the city's support in addressing spatial requirements (both for educational purposes and as accommodation for students at the faculty) as well as the city's efforts to help teachers, for instance, by offering lower rental prices in flats owned by the city.

In the Central Bohemian Region, the faculty's partners include the Rehabilitation Institute Kladruby (cooperation in the field of accredited instruciton of physiotherapy), the Regional Centre of Rescue Service of the Central Bohemian Region, the hospitals in Slaný and in Rakovník, companies LINET, spol. s r. o., and BEZNOSKA, s. r. o. With these partners, the faculty cooperates in the field of education (practical trainings for students, commissioning and supervision of bachelor and master theses, employees of these companies also teach at FBME) and in the field of research and development.

In 2018, the faculty organized a number of cultural and social events for its students and employees, as well as for the general public. They include: the long-term and successful cooperation with the civic association Halda (a series of popular scientific lectures for the general public under the title Science Café in the faculty's building, which has become popular also outside the city), Junior University, 13th representative ball of

FBME CTU, Kladno Majáles, the traditional Jan Lewinský Memorial - Student Iron Fireman, Peace Run Kladno-Lidice, Christmas Collection of Toys for the Children Rehabilitation Care Centre Zvonek in Kladno, etc.

The Faculty of Information Technology focuses on information technology and integrates study applicants, teachers, professional public and partners primarily in Prague and the Central Bohemian Region.

The Klokner Institute has been cooperating with research institutes and companies, primarily in the field of construction across the Czech Republic. Apart from collaborative research, the institute also carries out contractual research, expert activities, testing and forensic expert activities. It cooperates with ŘSD, SŽDC, TSK, etc.

The cooperation of **the Masaryk Institute of Advanced Studies** with external partners in the Czech Republic is carried out mainly through MIAS's membership in the Czech Management Association (ČMA), the Club of Personnel Managers of the Czech Republic, the International Society for Engineering Education (IGIP) and the Association of Adult Education Institutions, o. s. Cooperation of MIAS with external partners was strengthened in 2018 by the integration of the Institute of HR Management.

Despite its international focus, **the University Centre for Energy Efficient Buildings** also strives to strengthen its leading position in the region and develop cooperation with regional administration, schools in the region, non-profit organizations and the private sector. Through this cooperation, the centre contributes to the establishment of a truly Smart Region. In 2018, the centre continued to closely cooperate with the town of Buštěhrad, where UCEEB is based, with the Central Bohemian Innovation Centre and with Kladno and Slaný. For instance, UCEEB participated in the project of a passive library in Dobříš, which will be constructed in cooperation with a German association of energy active buildings. As part of its activities, UCEEB aims to establish a close cooperation with regional partners. On the level of contractual research, UCEEB offers consultancy services, primarily in the field of Smart Cities and energy of buildings, to a number of towns in the Central Bohemian Region (Kladno, Slaný, Podolánka, Dobříš, Tuchoměřice, etc.) as well as to the Capital of Prague. Together with regional administrations, UCEEB prepares projects under the H2020 programme and helps to apply the Smart Region principles.

The Czech Institute of Informatics, Robotics and Cybernetics actively works accross the Czech Republic and supports the exchange of information and interdisciplinary cooperation between academic, industrial and public entities. Fully in line with this intention, a long-term active approach to fulfilling the aims of the Industry 4.0 initiative, and taking inspiration from the German Platform Industrie 4.0, CIIRC played an important role in the establishment of the National Centre of Industry 4.0 (NCP4.0) in September 2017. This is an open academic industrial platform that unites leaders in innovation – universities, companies and professional organizations – whose aim it is to jointly contribute to the development of Industry 4.0 in the Czech Republic.

The centre aims to become the main creator and bearer of technological visions of Industry 4.0 in the Czech Republic, become an umbrella organization for sharing and synergy use of competencies and reseach and development facilities, participate in the

definition of relevant study fields, help develop technologies for Industry 4.0 and their implementation in companies and initiate and help create government policies for industrial digitalization.

The lead founding partners were CTU, Brno University of Technology, Siemens, ŠKODA AUTO, Chamber of Industry of the Czech Republic, JIC, SIC and the Confederation of Industry of the Czech Republic; the founding partners were ABRA Software, DEL, Festo, KUKA Roboter CEE, SAP ČR, SIDAT and VSB-Technical University of Ostrava. After a relatively short period, NCP 4.0 was joined also by other partners from among academic and research institutions, industrial companies and professional organizations.

The activities of NCP4.0 are a natural continuation of the activities of the testbed for Industry 4.0, a key research and experimental workplace at CIIRC. The basis of the testbed is a flexible production line for parallel production of several product types in a number of variants. It combines various technologies such as additive manufacturing, working, robotic manipulation, intelligent transport systems, cooperation between humans and robots, automated storage and more. It opens up entirely new opportunities for industrial partners to test innovative solutions before they are introduced into real-world manufacturing. Using its own infrastructure, CIIRC supports other joint laboratories, offers a residential research programme and implements collaborative projects together with, for instance, the Association for Virtual and Augmented Reality: AVRAR, Factorio Solutions, MAGIK Eye, Pocket Virtuality and SmartPlan.

Open Doors Days and other seminars and workshops on issues related to Industry 4.0 are regularly held at the Industry 4.0 testbed.

In May 2018, under the auspices of doc. RNDr. Vojtěch Petráček, CSc., the Centre of City of the Future (CCF) laboratory opened in the CIIRC building. Led by Ing. arch. Michal Postránecký, CCF is a virtual experimental testbed of the city, region, landscape, and the technical infrastructure in it, other types of urban settlements and units that are located in this space. Together they create a complex interconnected system that will serve for research, interconnection of academic sector, commercial sector and representatives of municipalities, for presentation of projects and for educational purposes.

Experts at CIIRC together with other leading experts from research centres in the Czech Republic laid the foundations of the Czech AI initiative - AICZECHIA. AICZECHIA is an open platform without legal personality represented by members of renowned Czech institutions and teams working in the field of artificial intelligence and its development.

The Institute of Experimental and Applied Physics cooperates with subjects across the Czech Republic - with universities in Plzeň, Opava, Pardubice, Brno, Ostrava, Vyškov; with high schools in Opava, Pardubice, Kladno; with firms in Třebíč, Hradec Králové, Turnov, Kralupy nad Vltavou, Jablonec nad Nisou.

11.3. CTU activities and significance outside the region

The Faculty of Civil Engineering is actively involved in scientific and research programmes at national and international levels. The faculty participates in projects commissioned by the majority of national providers, and in the framework of many of its projects it cooperates with other organizations across the Czech Republic. In 2018, the faculty received a record number of international projects under Horizon 2020 programmes, Interreg, RFCS, the Visegrad Funds, etc.

The Faculty of Mechanical Engineering has a great reputation in the Czech Republic for the quality of its graduates and has occupied the first place in polls among employers. The faculty expanded outside Prague and the Central Bohemian Region and in 2017 it set up aircraft engine test centres within the Centre of Advanced Aispace Technology in Hradec Králové. At European level, the Faculty partnered with universities from Germany (e.g. RWTH Aachen, TU Chemnitz), France (ENSTA Brest, IFP School Paris, etc.), the Kingdom of the Netherlands (TH Arnhem et Nijmegen), Belgium (KU Leuven, TU Ghent), Spain, Greece and the United Kingdom. Its participation in ongoing and upcoming Horizon 2020 projects and in ERASMUS+ as well as its membership in non-governmental international organizations is indicative of its growing prestige in Europe.

The Faculty of Electrical Engineering strives to develop international activities in the field of education and research. The faculty's departments are involved in solving international scientific projects together with prestigious foreign institutions. Continuous development of internationalization and international mobility is of great importance to the faculty.

The Faculty of Nuclear Sciences and Physical Engineering recognizes the importance of interregional and international cooperation and attaches great importance to it. Subsequently, the faculty strives to build good international relations, which are beneficial for both the students and academic staff at FNSPE. In some fields of study, primarily in the field of nuclear sciences and their application, FNSPE is the only faculty in the Czech Republic that provides education required by the application sector. At the same time, several major research infrastructures in the field of physical sciences that use radiation (e.g. BNL-CZ, CERN-CZ) and power engineering (WCZV) are based at FNSPE

In the long-term, **the Faculty of Transportation Sciences** places emphasis on activities reaching beyond the region both in the Czech Republic and internationally. The detached department in Děčín is involved in activities outside the region thanks to long-term cooperation with Westsächsische Hochschule Zwickau under operational programmes on transboundary cooperation Ziel3/Goal 3 and the Czech Republic - Free State of Saxony 2014-2020/Goal 2. In 2018, the detached department continued to build and develop the Laboratory for Simulation and Visualization under the joint project "Use of Modern Visualization and Simulation Technology in the Field of Traffic Systems". Project No. 100314336 H2AC4schools - Races of Saxon and Czech Schools – the World of Hydrogen Electromobility PrOJETÍ, in cooperation with UCT Prague and Technische Universität Chemnitz, which contributes to the promotion of technical education in Northwest Bohemia and Saxony through the development, construction and races of

hydrogen cars for high school student teams, is funded from the same operational programme. Within the Elbe - Labe Euroregion and its Small Projects Fund under the Czech Republic - Free State of Saxony 2014-2020 programme of transboundary cooperation, the detached department in Děčín initiated and implemented the project NETUR - New Ecological Traffic (systems) for Urban Regions, whose aim was to facilitate exchange of practical experience in the development of utility cycling and its incorporation in the overall development of the cities of Děčín and Dresden. Further, the detached department organized workshops for representatives of regional administration, interest groups such as ADAC, ADFC, BVMW, KČT, DPMD or destination agencies on topics including utility cycling and urban development, acquisition and evaluation of data on utility cycling, participation of citizens, integration of the Elbe Cycle Route and examples of good practice. The project was a success and very well received by all participants, therefore in 2019 these activities will continue under a follow-up project NIRIN - New Ideas for Using Railway Infratructure. In the summer of 2018, as part of the development of international cooperation between technical universities, students at the detached department in Děčín attended a three-week summer school Belt and Road Student Summer Camp - Beijing, focused on Green Car & Autonomous Vehicles and organized by BIT (Beijing Institute of Technology). Along with the students from Děčín, the event was attended by 141 students and teachers from various universities in Russia, Estonia, Malaysia, China, Slovakia, Poland, Israel, Scotland, Great Britain, Serbia, Belarus, Cyprus and Indonesia.

The importance of **the Faculty of Biomedical Engineering** reaches beyond the borders of the Central Bohemian Region. The faculty plays a significant role among public universities and other research and educational institutions in the Czech Republic. In line with its long-term plan of development, FBME systematically extends professional and social cooperation and develops connections with companies and clients in the framework of interest organizations across the Czech Republic. The faculty cooperates with central and regional authorities of the state administration. This collaboration takes on a variety of forms - assigning topics of semester projects or master theses, topics of doctoral theses, through expert opinions or joint educational activities. The connection with companies and cooperation with clients focuses on innovation processes and the technology transfer, organization of courses, trainings and transfer of knowledge and information at various conferences and seminars, through accredited activities, etc. Regular internships and excursions of FBME students to public administration bodies, health care centres and professional associations in the Central Bohemia Region and in the rest of the Czech Republic are an important part of this cooperation.

The Faculty of Information Technology systematically builds good quality relationships with foreign partners and places emphasis on international experience of its students and staff. The faculty is a member of a major research infrastructure - ELIXIR CZ.

In the framework of its international activities, **the Klokner Institute** focuses on cooperation with foreign clients in the field of testing of various structural elements and materials, such as testing of high strength cement materials for the Lafarge centre (France), elements of skeletal joints for Peico (Finland), insulating elements for PPC (USA), specialized aluminum joints Milos (the UK), etc. Development of standards in

construction is another area of international cooperation. Employees of the institute participate in creation of standards within European and international working groups for climate loads, for the principles of design and robustness of structures and for the principles of evaluation of existing structures.

The Masaryk Institute of Advanced Studies is a member of the International Society for Engineering Education (IGIP), and its other foreign partners include Instituto Politécnico de Castelo Branco, Universidad de Léon and the Budapest Business School. The institute also cooperates with foreign partners in the framework of projects titled Modern Logistics Learning (funded by the EU) and Current Issues in Business from a V4 Perspective (funded from the International Visegrad Fund).

For **the University Centre for Energy Efficient Buildings**, the area of international development is of crucial importance. In this respect, UCEEB focuses on building strategic partnerships with major European institutions. The result is the joint preparation of H2020 projects, where the lead partner is a prominent institution (e.g. VTT, KU Leuven, TU Dresden, TU Denmark). The University Centre established intense cooperation with Germany on energy-intensive buildings and in June 2017 it became the first foreign member of the Netzwerk Effizienzhaus Plus, a network of leading German construction companies and top universities. The UCEEB's aim in the Czech Republic is to strive for the highest energy standard that would be achievable with respect to investment, operation, impact on the environment and on the health and comfort of the population. UCEEB also closely cooperates with the German-Czech and German-Slovak trade association (DTSW) and with the two major institutions that are in charge of the Effizienzhaus Plus initiative in Germany - the German Federal Ministry of the Environment (BMUB), which is also responsible for the construction industry, and Fraunhofer IBP (Insitute for Building Physics).

The Czech Institute of Informatics, Robotics and Cybernetics actively develops partnerships with leading research organizations, especially within the European research area. Projects are implemented or are being prepared with institutions such as INRIA (France), Radboud University Nijmegen, TU Delft (the Netherlands), Universität Innsbruck, AIT (Austria), DFKI, ZeMA, Fraunhofer and Karlsruhe Institute of Technology (Germany), NIP Toulouse (France), ITI (Greece) and others. Together with the German research organizations DFKI and ZeMA and Brno University of Technology, CIIRC submitted the RICAIP (Research and Innovation Centre on Advanced Industrial Production) project to the 2nd round of WIDESPEAD-Teaming H2020 call. The aim of the project is to create a Czech-German research centre of Industry 4.0. As part of this project, the testbed for Industry 4.0 in the Czech Republic has become one of the four geographically distributed centres that are virtually connected to create an experimental, yet fully functional, integrated production and research operation. RICAIP aims to lay the foundations for the very first European research infrastructure for advanced industrial production.

CIIRC was also actively involved in the prominent pan-European AI network CLAIRE (Confederation of Laboratories for Artificial Intelligence Research in Europe). Aside from CLAIRE, CIIRC also closely cooperates with the elite ELLIS network (European Laboratory

for Learning and Intelligent Systems), which unites European reaearch elite in the field of machine learning.

CIIRC is also one of the partners in PRAIRIE (PaRis Artificial Intelligence Research Institute), which aims to become an international research centre in the field of artificial intelligence. The institute was established by French President Emmanuel Macron in March 2018.

The Institute of Experimental and Applied Physics also focuses on international activities and has long been cooperating with international laboratories and organizations, including CERN, JINR Dubna, ESA, ESS and a number of university workplaces (Germany, France, the UK, the USA, Canada, Sweden, the Japanese space agency JAXA).

12

12. Social affairs of students and staff, infrastructure, development at CTU

12.1. Accommodation and catering services at CTU

Tab. 12.1

Lodging, catering	
Total accommodation capacity at the university	7 957
Number of beds in rented establishments	0
Number of accommodation applications submitted, as on 31/12/2018	11 108
Number of approved accommodation applications, as on 31/12/2018	9 413
Number of bed-days in 2018	2 216 763
Number of main courses served to students in 2018	1 017 951
Number of main courses served to university staff in 2018	88 701
Number of main courses served to other users of the catering services in 2018	612 531

12.2. Library collection at CTU

Tab. 12.2

University libraries	
	Number
Increase in the library collection in 2018	6 175
of which increase in physical units	4 911
of which increase in e-books in permanent ownership	1 264
Library collection in total	485 660
of which increase in physical units	483 019
of which increase in e-books in permanent ownership	2 641
Number of subscribed periodicals:	280
physical	7
electronic (estimated)*	0
in both formats**	6 175

Note: *Only titles of periodicals for which the library has a subscription (or obtains as a gift or in exchange) in paper or electronic format are included; this table does not include other periodicals that library users can access through consortia of full-text sources.
Note: **The number of titles in both formats consists solely of titles, where both formats are paid for independently (i.e. in case the subscription is for the paper format and the electronic format is a free bonus, only the paper format is included, etc.)
Note: Electronic units include only titles acquired individually, and do not include books and periodicals that are part of subscribed "packages" from publishers of specialized and scientific books.

12.2.1. Central Library at CTU

The Central Library at CTU (ÚK) provides information resources in support of studies, science and research activities at the university. ÚK gathers and makes accessible specialized collections of printed and electronic documents linked to the study and scientific disciplines investigated at CTU.

As on 31 December 2018, the collection of printed documents contained a total of 483,019 library units and a total of 53,975 loans were registered. The collection of electronic documents, which includes e-books, digital versions of journals, digital libraries and databases, has been built systematically. Access to the Scopus multidisciplinary citation database and Web of Science products were available for scientific work and for evaluations of scientific results, including the Journal of Citation Reports database and the analytical tool InCites, which works with the source data from the Web of Science and carries out advanced analysis of productivity. The IHS Standard Expert, a platform for technical standards, and the Helgi Library, a database of economic and statistical data, were made accessible.

ÚK provided access to various e-books. A collection of permanently purchased e-books used at the university included 2,641 items in 2018. Short-term electronic loans from the

E-book Library collection of foreign books and the Flexibooks collection of Czech books were possible. ÚK focuses on providing electronic services, which is linked to efficient use of electronic information sources and services in support of science and research, information education and scientific publishing.

In 2018, ÚK organized educational events – seminars, training sessions, courses for doctoral students, visits to the library for 1st year students. The most effective method of information education of students is when staff at the library are invited to teach courses at faculties and departments. The courses on Information for Science and Research for doctoral students continued; their aim was to provide doctoral students with support for their scientific work and scientific publications, both in direct form and through e-learning.

ÚK continued to build up the CTU Digital Library (DK ČVUT), an institutional repository for storing CTU graduation theses and published R&D results. Archiving publications in the institutional repository ensures on-line access, long-term preservation and further circulation of scientific results achieved at CTU and makes them accessible for internal and external evaluation.

The CTU editor's office of scientific journals is part of ÚK. The editors' office is responsible for publishing of the CTU peer-reviewed journals *Acta Polytechnica* and *Acta Polytechnica CTU Proceedings* (a peer-reviewed periodical dedicated to publishing proceedings from CTU conferences). The library provides the academic community with an environment for distribution of publication standards, such as the Digital Object Identifier (DOI) for unique identification of digital documents and a unique international identifier for authors. This includes primarily systematic distribution of identifiers, maintaining persistence, a standardized metadata description and system interoperability so that the identifiers can be made a full use of and are compatible with publishers and library systems.

12.3. CTU involvement in the Institutional Plan

Tab. 12.3

CTU Institutional Plan 2018				
	Financial resources provided		**Fulfilment of set targets/indicators**	
	Capital	**Current**	**Initial position**	**Target position**
Name of partial task	[thousands of CZK]	[thousands of CZK]	[%]	[%]
Equipment for the Faculty of Civil Engineering	4 402	0	0	100
Development of equipment base at FME	3 402	0	0	100
Purchase of equipment FEL	4 824	0	0	100
Innovation of equipment for classes	2 791	0	0	100
Equipment for workshops and modernization of the PC room FA	1 787	0	0	100

Purchase and modernization of the equipment facilities at FTS CTU in Prague	1 542	0	0	100
Material equipment for subjects in the field of Biomechanics for study branches BMT, OPT, FYZ and PMB at FBME CTU	1 483	0	0	100
Extension of private cloud and network infrastructure	1 498	0	0	100
Measuring system for long-term measurements in situ	709	0	0	100
Modernization of network infrastructure (phase I), modernization of audio-visual technology in classrooms (phase I), modernization of PC technology for academic workers (phase II)	643	0	0	100
Modernization and innovation of equipment for enhancing physical fitness of students III	501	0	0	100
Modernization of the Central Detector and Analytical Laboratory	904	0	0	100
Extension of supercomputer cluster by two nodes	514	0	0	100
Support of study processes	0	2 500	0	150
Talented students	0	2 000	0	264
Development of LLL courses/programmes at CTU	0	1 000	0	100
Counselling	0	500	0	100
Promotion of studies at the Faculty of Civil Engineering CTU through interactive cooperation with high schools	0	285	0	107
Support of technical education of youth for primary and high schools in the Czech Republic	0	265	0	100
Education of high school teachers and popularization of technical and natural disciplines among high school students	0	280	0	100
Support and involvement of active students interested in mathematics, physics, IT and chemistry in scientific life	0	220	0	100
Promotion	0	225	0	151
Promotional projects at FTS – MotoStudent, Dean's Award, Sky Days, Smart Cities	0	225	0	100
Science by technology and by play at specifically organized events for high school students	0	235	0	100
Promotion of studies at FIT CTU and cooperation with high schools	0	275	0	100
Popularization of technical and natural disciplines in cooperation with other entities	0	490	0	120
Student mobility	0	11 483	0	100
Staff mobility	0	2 000	0	150
Competencies for commerce	0	1 000	0	100
Support of subsidies	0	2 000	0	100
Improvement of language and other skills of staff and doctoral students at CTU	0	1 000	0	122
Intersector mobility	0	1 000	0	100
Support of the educational process	0	1 380	0	100
New online KOS	0	3 087	0	100
Changes in legislation, GDPR	0	2 590	0	100
Mobilities	0	863	0	100
Development of Supercomputing	0	237	0	100
Modifications in the integration parts of ALEPH	0	250	0	100
EZOP + V3S	0	1 629	0	100

CTU data storage	0	500	0	100
Analysis of impacts of GDPR, implementation of GDPR – procedure and regulations	0	723	0	100
Implementation and development of device for support of management of supplies of ICT services	0	704	0	100
Systematic training	0	190	0	100
Reconstruction of Shibboleth	0	447	0	100
Consolidation of services for authentication, authorization, identification	0	2 941	0	100
Download	0	550	0	100
Innovation of additional services and applications in ORCID/DSpace	0	679	0	100
Implementation of the Act on Cyber Security	0	580	0	100
Development of IS/ IT pursuant to the information strategy – faculty constituent parts	0	1 100	0	100
Support of study infrastructure – API	0	550	0	100
TOTAL	25 000	45 983	0	100

In 2018, the Czech Technical University in Prague was assigned a total of CZK 83,314,000 in the framework of the 2016–2018 Institutional Plan. These funds were used to finance seven priority objectives defined by the Ministry of Education, Youth and Sports. Aside of the priority objectives, additional funds in the amount of CZK 12,331,000 were allocated to the internal competition. Same as last year, following an agreement with deans of faculties, another CZK 4 million, saved in the previous year, were added to this sum. This money was allocated equally among four topics, namely "Talented Students", "Language Skills", "Development of the Information System" and "Support of Subsidies". The topics were further divided into individual partial tasks, which were formulated so that they met one of the priority objectives. Detailed information on each partial task is given on the registration cards of each partial task. For each partial task a budget was set up with binding indicators of fulfilment. In the course of the solution of projects dealing with the Development of IS, the structure of the partial task and its staffing were changed. This optimization was approved by the CTU leadership and resulted in efficient solution of the defined tasks. The change did not affect the fulfilment of the indicators of the institutional projects in 2018. The 2018 target under the 2016-2018 Institutional Plan was fulfilled in the individual subject areas related to the Plan for the Implementation of the Strategic Plan for 2018. On average, the Institutional Plan for the year 2018 was met at 107% of the average of the individual partial tasks. If a limit of maximum performance was introduced at 100%, the average performance would be 100%.


13

13. Conclusion

In 2018, the Czech Technical University in Prague again demonstrated that it´s scientific and research activities, together with the high level of all its study programmes, make it a research technical university that responds flexibly to the needs of the Czech Republic in technical fields, natural sciences and architecture and design. As has been stated in the individual chapters of this Annual Report, research and development activities have been and will continue to be an important component of the university activities on which it can build its educational activities. The scientists, researchers and teachers work in the area of basic and applied research as well as in the area of cooperation with industry in joint collaborative research and contractual research. The applied methods of instruction continue to involve students and teachers in cooperation with industry and regional administrations on specific subjects and are devised so that students have a maximum possibility to deal with specialized topics in the framework of research projects.

The research programme is linked to the elaborate system of preparation of scientists in doctoral study programmes. CTU had a large number of doctoral students in 2018 – 1,735 students in total - and this creates a huge potential for creative scientific work. Scientific and research projects were also reflected in the high quality of master study programmes and master and bachelor theses, which help to spread the renown of CTU. Also a number of results of these activities can be used in industry. Master theses win prizes in international competitions and a lot of them receive awards from the management of the individual faculties and of CTU, including the SIEMENS Awards and others. The educational process is by no means oriented solely to preparing experts in various fields. The teachers are also charged with preparing students for life, to ensure

that future engineers will contribute to the development of their professions and also to the quality of human relations, so that the term Czech engineer would remain a label of quality recognized at home and abroad. The development of students' personal qualities is one of CTU's major aims.

This Annual Report has also listed a number of joint activities and projects executed together with Czech and international industrial partners – including the development of aircraft engines, solutions for car industry, aeronautical and astronautical applications, biomedical research and applications and, last but not least, as one of only a few institutions of its kind in Europe, nuclear technology and physics – as well as in cooperation with foreign educational and research institutions. There has been increased cooperation between state administration, regional administrations and experts at CTU in solving demanding problems. Consultations for ministers and for officers of leading state administration bodies are an indispensable part of the expert activities at CTU.

The data on study activities has shown that, despite negative demographic trends, the university is popular with those students who are not put off by the demands and challenges of studying technical disciplines at CTU. As mentioned in the introduction, ca 5.8% of all university students in the Czech Republic in 2018 studied at CTU. This was also thanks to the introduction of new, attractive study programmes and the presentation of the results of work done by students and research teams in the media and at conferences. CTU pledges to continue in this encouraging trend in the years to come, as is stated in the 2016–2020 CTU Long-Term Plan and its annual updates (Plans for Implementation of the Strategic Goal for the given year).

Building a positive image of technical education and the enhancement of its prestige in society remains one of the university's goals also for the future.

In 2018, partial tasks of the Institution Plan were completed and in this way the main targets expressed in the Institutional Plan were met.

In 2018, several major research projects with international impact were initiated. This includes, among others, the Centre of Advanced Applied Sciences (CAAS), which unites top research activities of six CTU faculties, or the Research Centre for Informatics (RCI), which combines research in the field of informatics with research in artificial intelligence at two faculties. The development of the centre for aeronautics and astronautics at the Faculty of Mechanical Engineering and activities at CIIRC successfully continued in 2018. A backbone structure of several excellent directions relying on major projects and cooperation across the university was set up at CTU. This strategic architecture will be developed also in the years to come.

In the field of education we made a step further to join the European University project; we teamed up with the EuroTech alliance and we are currently waiting to hear whether our joint project submitted to the European Universities call will win support.

In 2018, CTU took a number of steps to achieve the goals defined in its mission and vision:

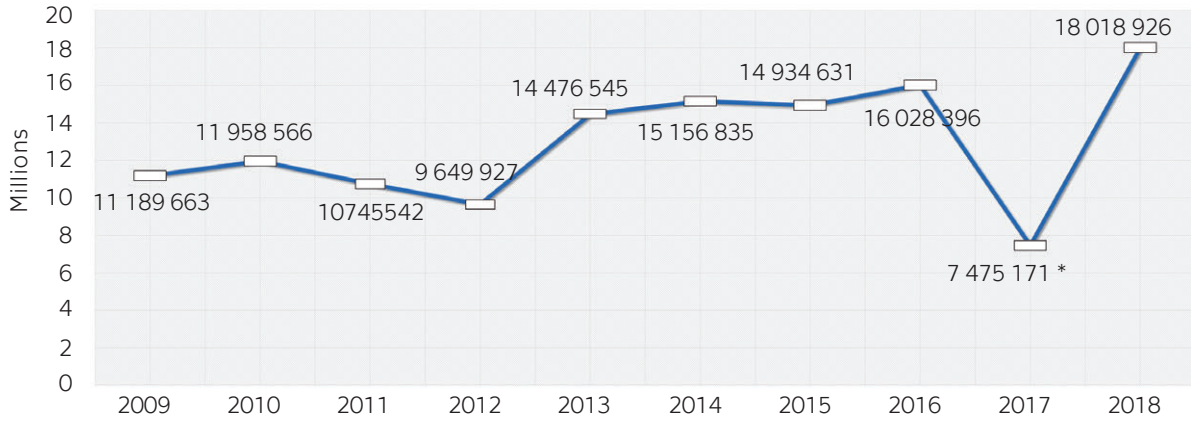
"In the future we want to remain a research university that will educate further generations of graduates and scientists with technical and general skills to satisfy the fast-changing requirements and needs of the decades to come."

However, a lot of work remains to be done.

Selected statistics and further information

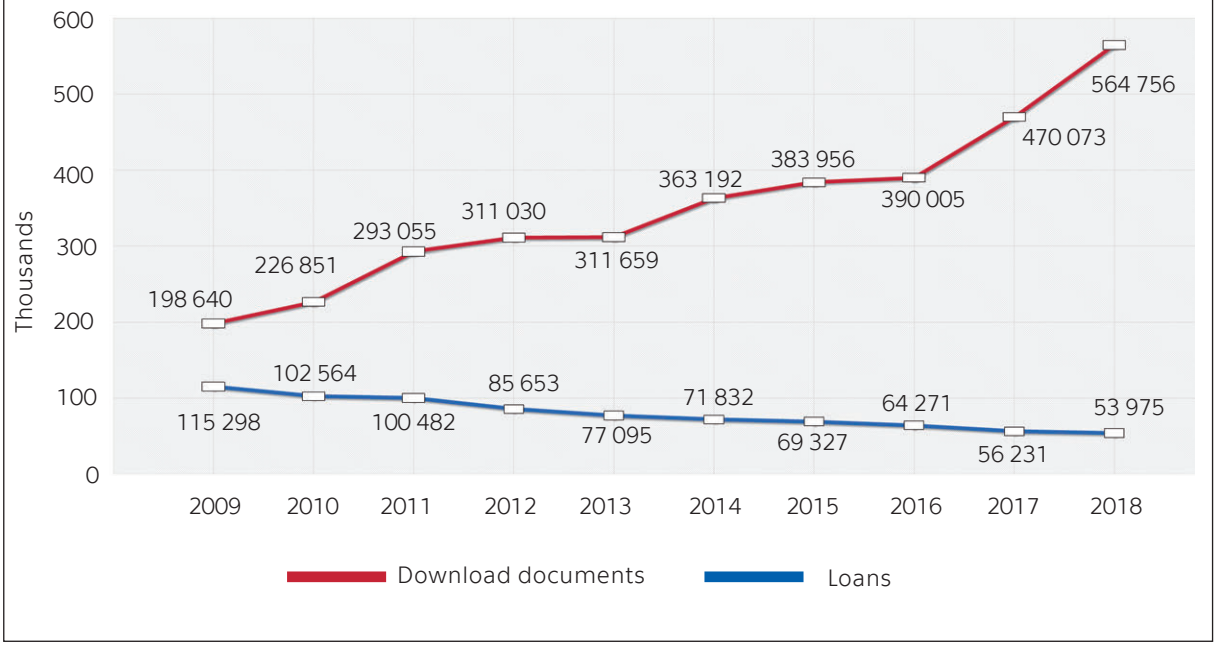
Central Library at CTU / statistics

Comparison of costs of financing of information sources – books and journals in paper version, e-books, licence fees and sharing the costs of accessing electronic information sources, services and tools

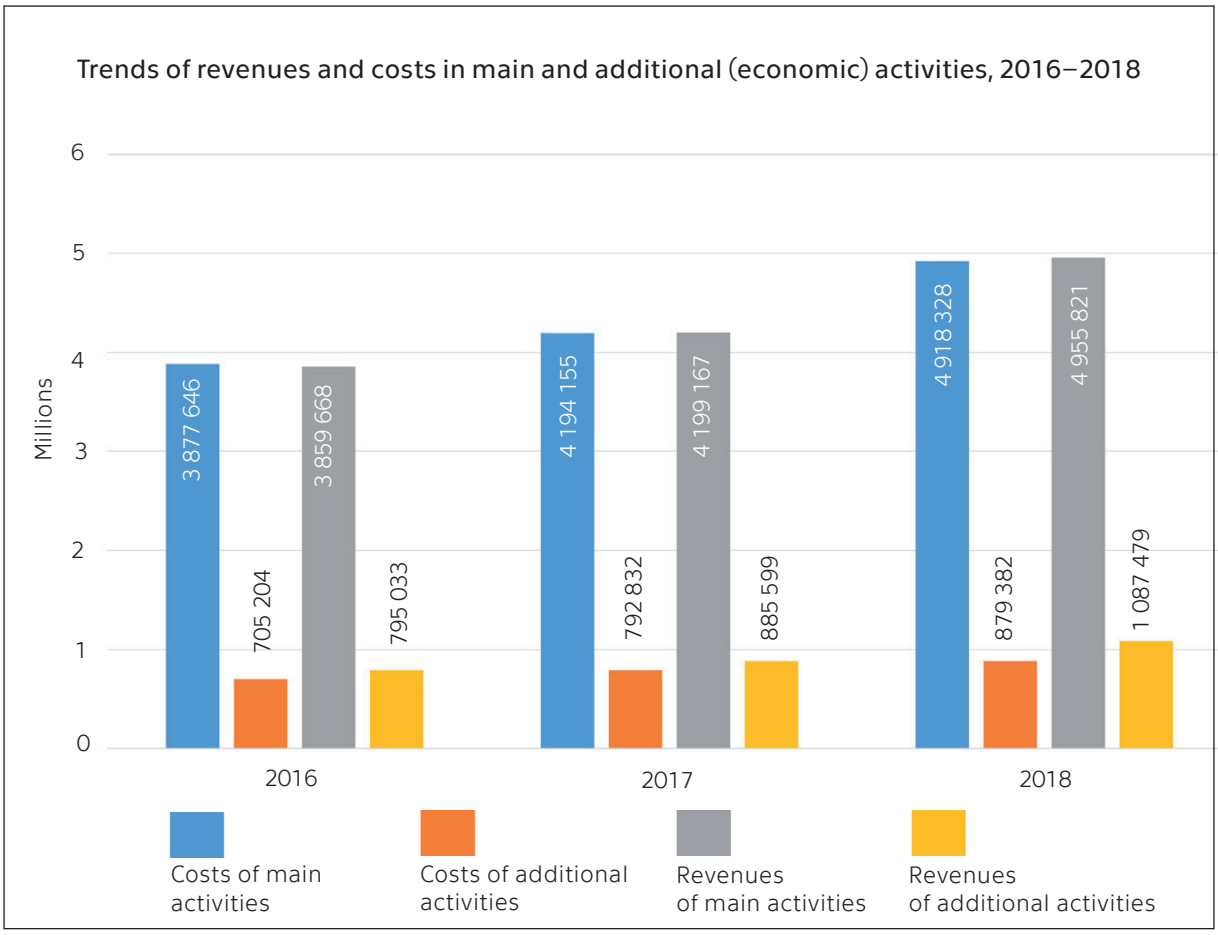


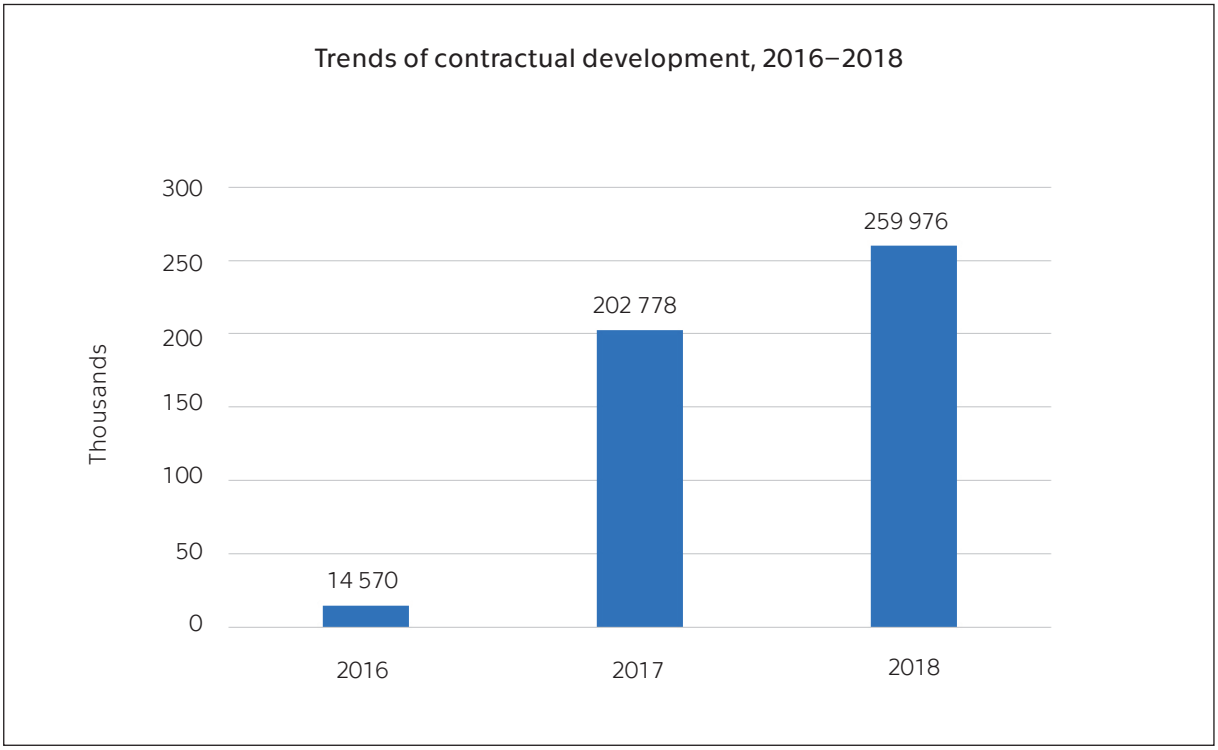
*Change in the accounting treatment

Comparison of physical loans and downloaded e-documents (full-text only)

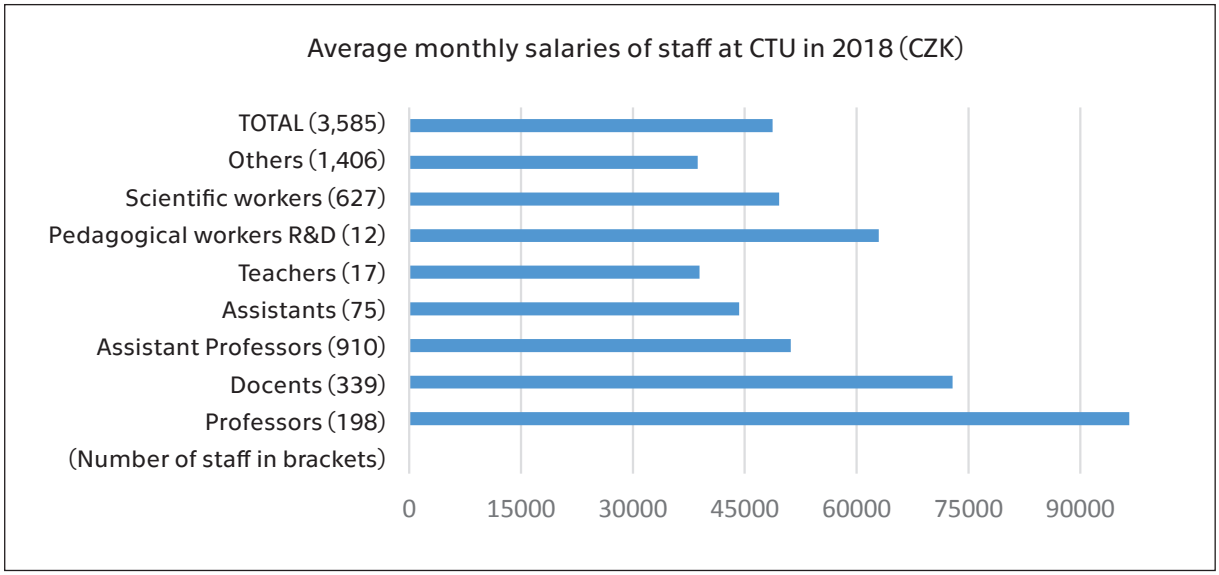


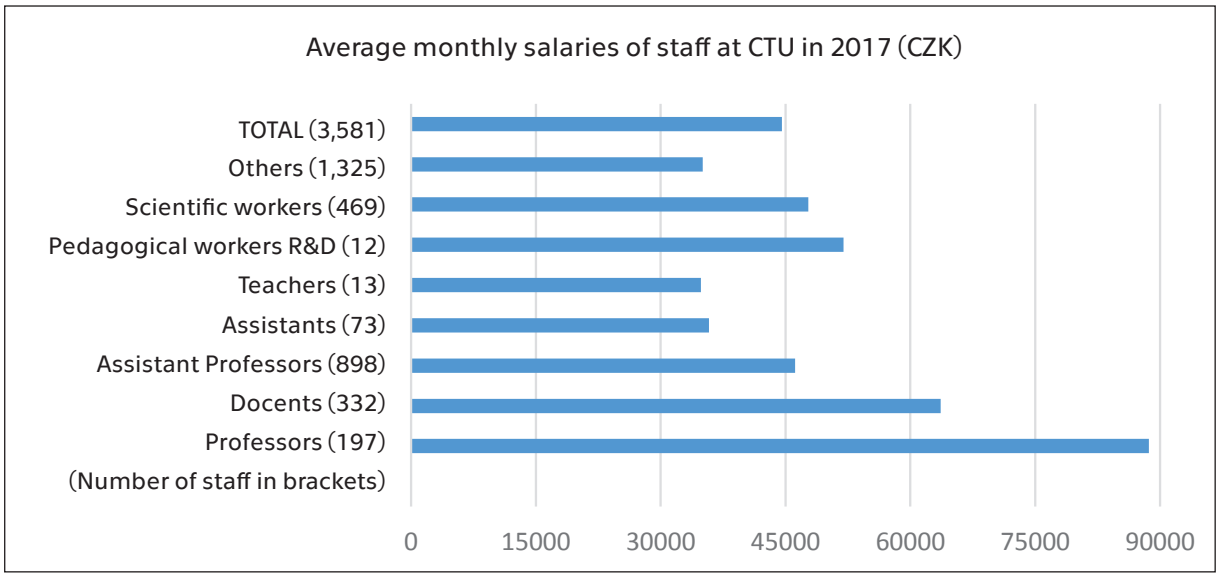
Selected financial indices, CTU 2016–2018

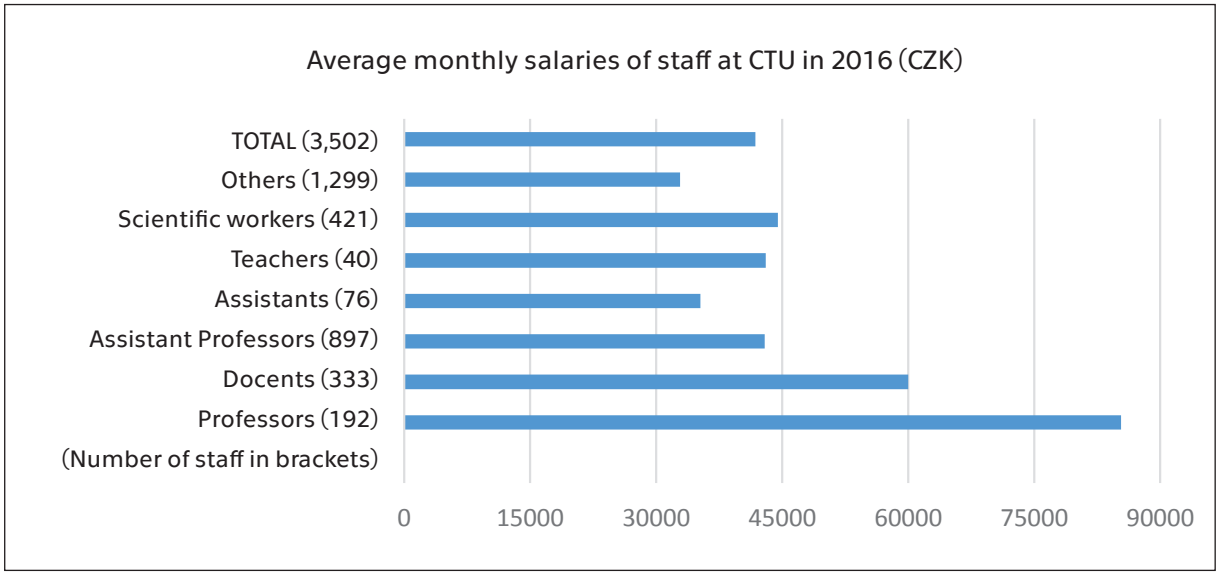




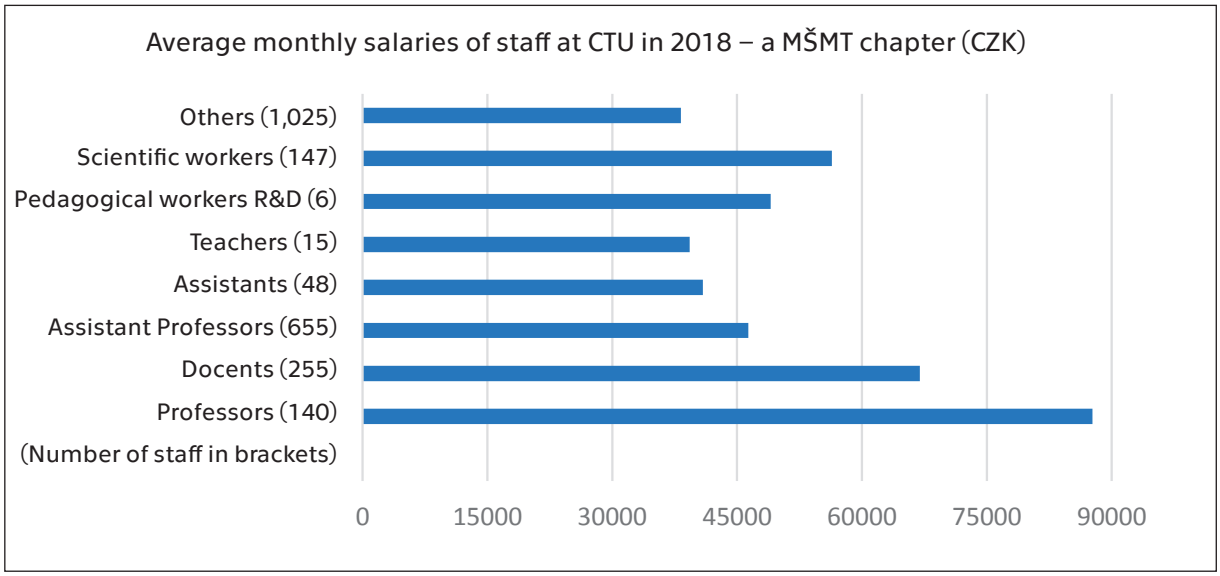
Average monthly salaries of staff at CTU, 2016–2018

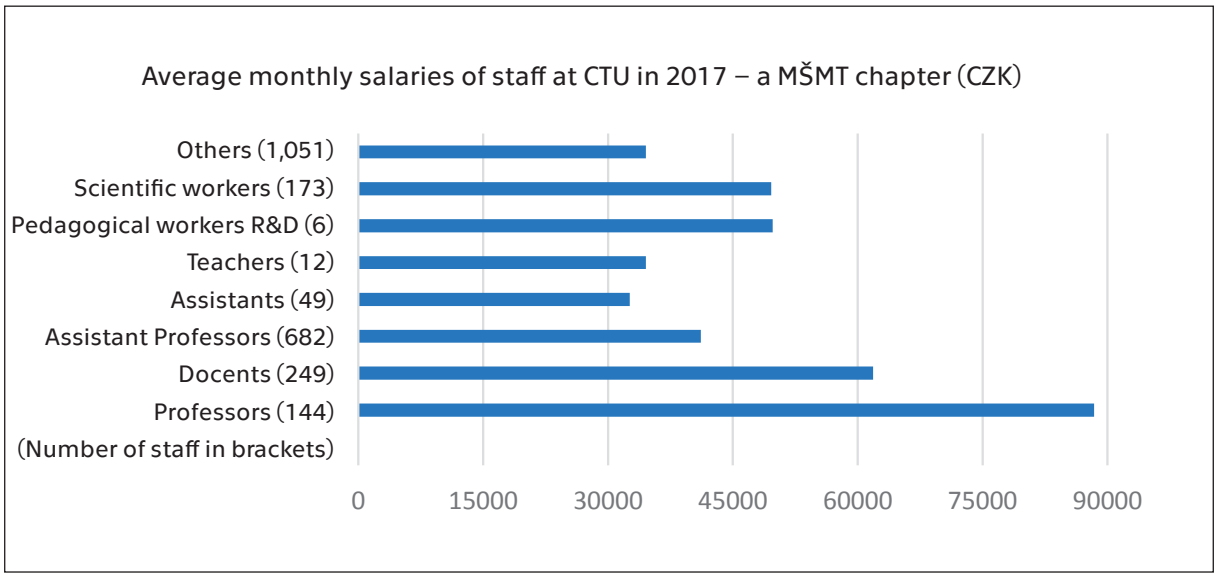


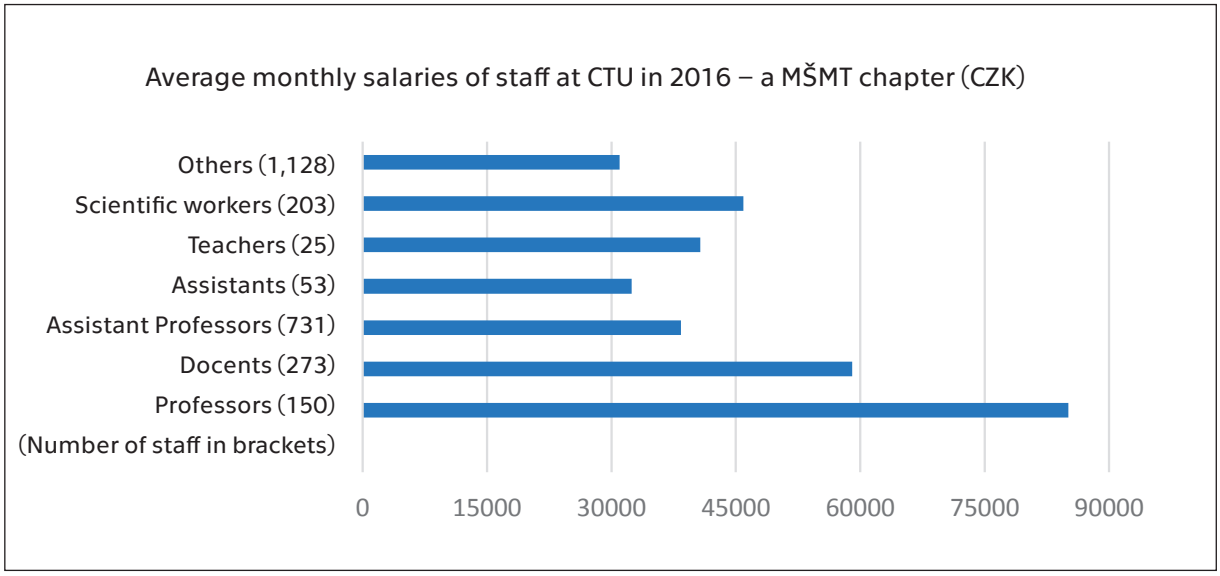




Average monthly salaries of staff at CTU 2016–2018 from a MŠMT chapter







Overview of CTU participation in OP VVV calls

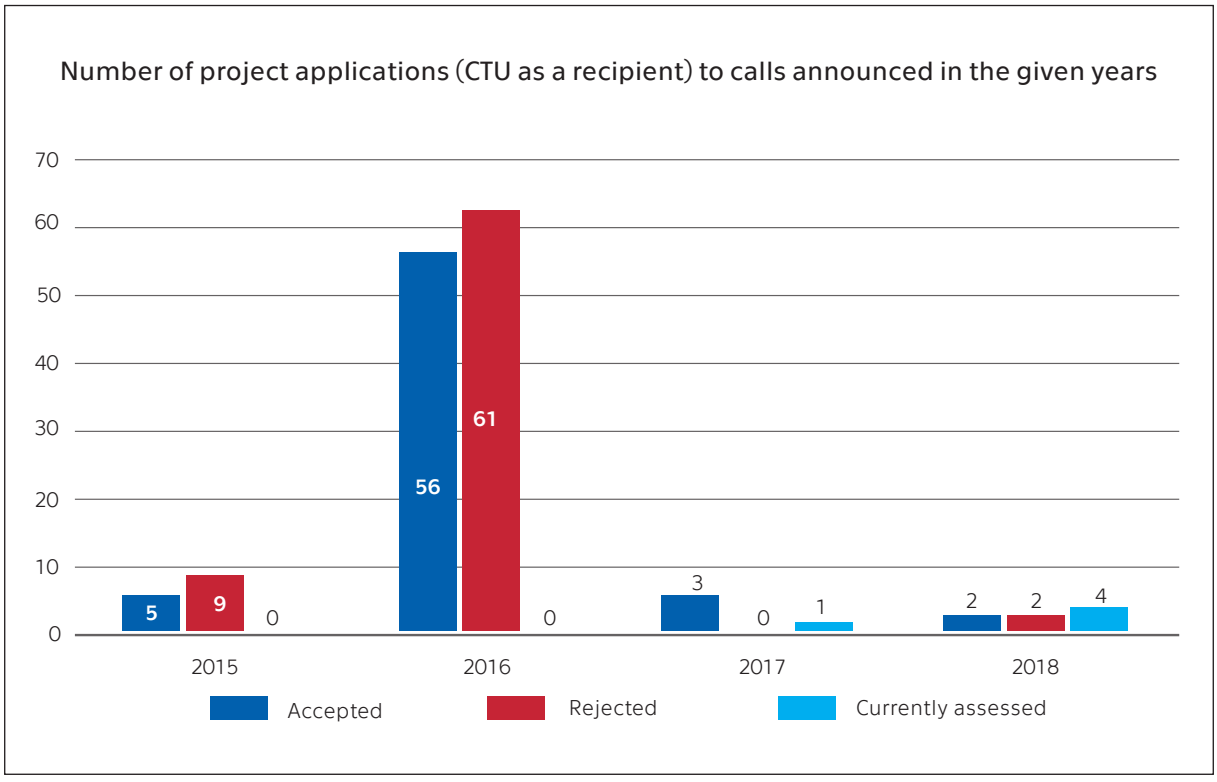
CTU submitted a total of 66 successful project applications as a recipient and another 13 as a co-recipient to OP VVV calls announced in the 2015–2018 period. The number of unsuccessful applications for CTU as a recipient was 72; in case of CTU as a co-recipient the numbers are unknown. Five projects are currently being assessed, in which CTU is a recipient.

Funds (total eligible costs) amounting CZK 5,318,000,000 were allocated to CTU as a recipient and another CZK 116,000,000 were allocated to CTU as a co-recipient by the Managing Authority in the OP VVV calls announced in the 2015–2018 period. Projects worth CZK 794,000,000 (of which CZK 549,000,000 were allocated to the RICAIP project – CTU share) are currently being assessed.

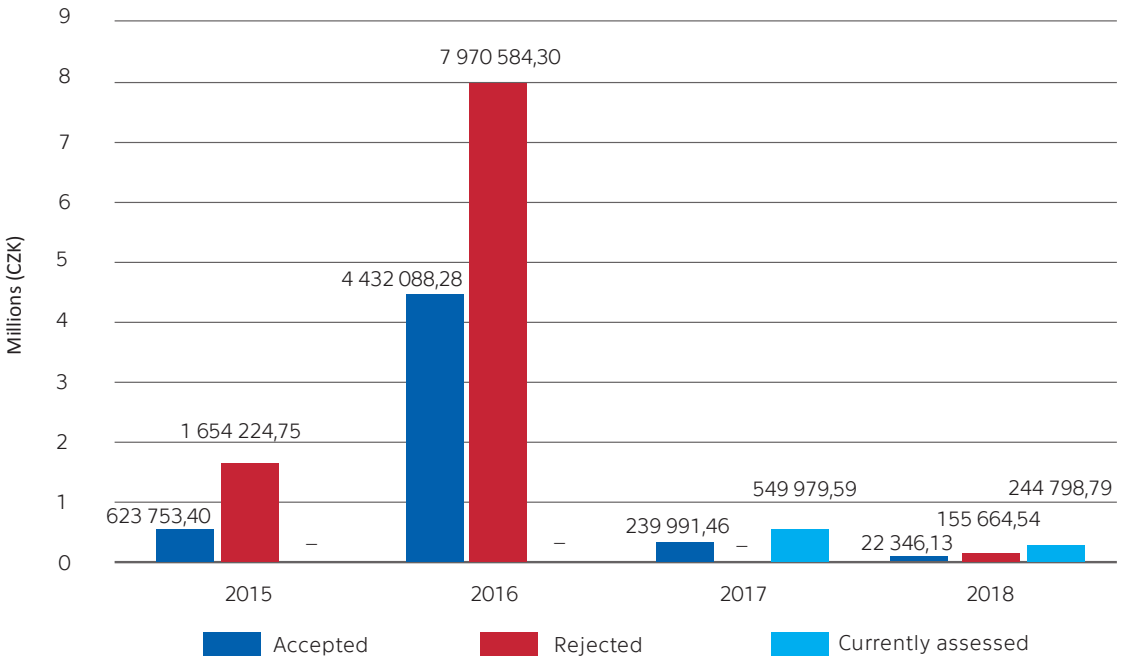
In total, CTU has so far received total eligible costs amounting CZK 5,434,000,000 for project applications. This amount has to be reduced by ca 2–3%, which is eligible costs of partners in projects, where CTU is a recipient.

The amount of funds allocated to constituent parts does not reflect the fact that constituent parts cooperate in a number of projects and thus share the eligible costs; also the amount of funds from university projects can increase the balance for constituent parts.

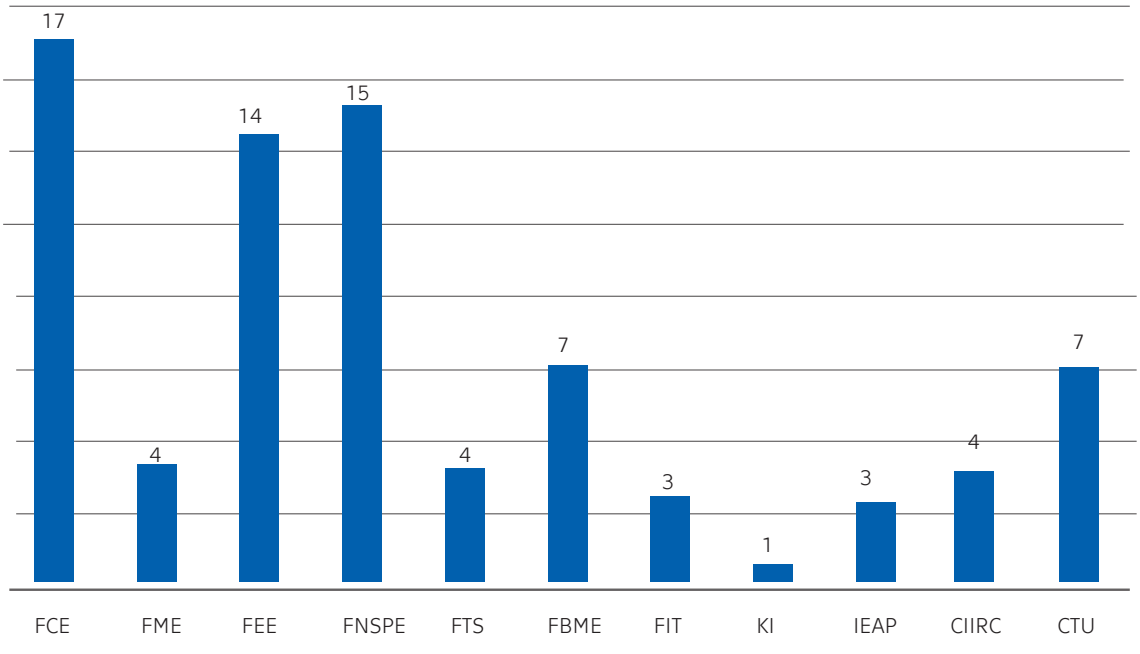
	Amount of allocated funds	Number
CTU as recipient	CZK 5,318,179,000,000	66
CTU as co-recipient	CZK 116,257,000,000	13
TOTAL	**CZK 5,434,436,000,000**	**79**
CTU currently assessed	794,778,000,000	5

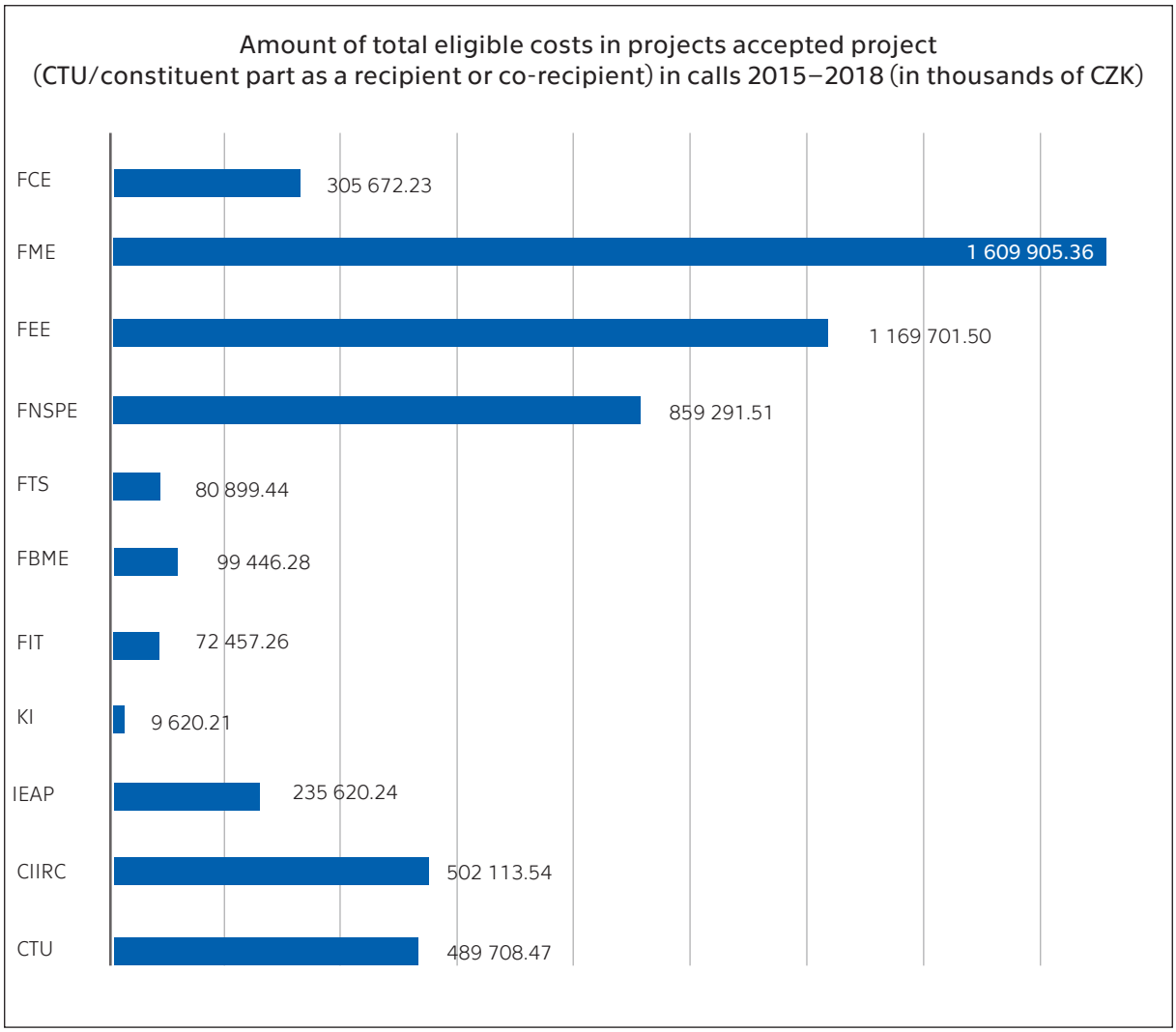


Amount of total eligible costs in projects (CTU as a recipient or co-recipient) in calls announced in the given years (in thousands of CZK)



Number of accepted project applications (CTU/constituent part as a recipient or co-recipient) in calls 2015–2018




Amount of total eligible costs in projects accepted project
(CTU/constituent part as a recipient or co-recipient) in calls 2015–2018 (in thousands of CZK)
FCE
305 672.23
FME
1 609 905.36
FEE
1 169 701.50
FNSPE
859 291.51
FTS
80 899.44
FBME
99 446.28
FIT
72 457.26
KI
9 620.21
IEAP
235 620.24
CIIRC
502 113.54
CTU
489 708.47