CZECH
TECHNICAL
UNIVERSITY
IN PRAGUE

This is CTU!

Flexible Research University in Europe

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About CTU

ENGINEERING OFTEN PERFORMS MIRACLES

CTU is the third largest university in the country in terms of student numbers. There is always great interest in studying at CTU, and in collaborating with it on research projects. What makes CTU a top university?
CTU can still be considered as the third biggest university in the Czech Republic, even though it has been overtaken in terms of student numbers by the Czech University of Life Sciences, the Technical University in Brno, and Palacký University in Olomouc. In terms of funding for its study programmes, our University has retained third place, due to the demanding nature of the programmes and the University's high quality coefficient. In science and research, it takes second place in the Czech Republic on the strength of the evaluation of its research outputs. It finishes above Masaryk University, which is a considerably larger institution. CTU profiles itself as a high-quality research university, and this is particularly important at a time when the demographic curve has beeen sinking. Graduates of the university are successful on the employment market.

The demand for places at CTU has not fallen off. Is that because CTU is offering new fields of study reacting to trends in engineering and to the requirements of industry?
The overall number of applications to study on bachelor programmes and on follow-up master's programmes always exceeds the capacity of the university and, above all, the financial limits that the Ministry of Education has unfortunately imposed across the board, without taking the needs of the Czech economy into account. Most of the faculties have got accreditation for new fields of study that have been arousing great interest. CTU has been developing programmes taught in English.

Are you satisfied with what CTU is able to offer to its students, teachers and scientists?
The New Building, and the reconstruction and modernization of all the big lecture theaters in the university's historical buildings have significantly improved the working environment for students and for the academic staff. Funding from the EU Operational Programmes is contributing to further developments. The University Center for Energy-Efficient Buildings in Kladno is under construction, and I think we will be able to win a grant to convert the Technical Menza building for the purposes of the Czech Institute of Informatics, Robotics and Cybernetics.

As a specialist in circuit theory, one of the classical fields of electrical engineering, you must be pleased that fields of specialization linked with electrical engineering, electronics and IT have been developing strongly, that there are excellent research centers...
I am very pleased that the field that I chose to study has been developing rapidly, especially in the area of electronic devices for information processing. Almost everyone uses computers and the internet nowadays. Specialists in IT, electronics, and also high-voltage electrical engineering are now, and will continue to be, in short supply. The same is true for constructors of machinery and engines, technicians for nuclear instruments, transport engineers, as well as specialists in health care, where engineering often performs miracles. ■

Prof. Ing. Václav Havlíček, CSc.
Rector
Chairman of Scientific Council of CTU

MORE THAN 24 500 STUDENTS

The Czech Technical University in Prague (CTU) is one of the biggest and oldest technical universities in Europe. It was founded on the initiative of Josef Christian Willenberg on the basis of a decree issued on January 18th, 1707 by Emperor Josef I.

CTU educates modern specialists, scientists and managers with knowledge of foreign languages, who are dynamic, flexible and able to adapt rapidly to the requirements of the market. CTU offers a very broad and attractive range of study programmes. For the 2013/2014 academic year, students can choose from 39 study programmes, within the framework of which 157 study specializations are offered.

In the 2012/2013 academic year, more than 24 500 students were registered in bachelor, master and doctoral programmes at CTU and about 1 500 academic workers taught and carried out research at the university. The European dimension is gradually becoming part of the ordinary everyday work of the faculties, departments and research teams, and the difference between national and international is becoming less visible and less significant. International activities are coordinated by the International Office, in close collaboration with the university's outstanding International Student Club (ISC).

CTU students and staff receive growing numbers of visitors from abroad, and also travel more intensively outside the country, not only within the framework of centrally organized activities. More and more of the international links are on a faculty, department or individual basis. Internationalization of education, science and research is already a normal part of the academic life of university workplaces. This has been raising the popularity of CTU, especially with incoming exchange students. CTU has been awarded the prestigious Diploma Supplement Label.

CTU in University Rankings

In 2013, CTU was placed between 451st – 460th place out of 17 000 world universities in the QS World University Rankings (published in September 2013), and in 207th place in the ranking of technical universities. In Civil and Structural Engineering, CTU was ranked in 51st – 100th place in the QS World University Rankings in 2013 (in 2011, it was ranked in 151st – 200th place, and in 2012 it was in 101st – 150th place). In Mechanical Engineering, CTU was ranked in 151st – 200th place in 2013 (in 2012, it was in 101st – 150th place). In Computer Science & Information Systems, CTU was ranked for the first time in 2013, and appeared in the group of universities ranked between 151st – 200th place.

Research, development, artistic and creative work form an integral part of the activities of CTU as a university. CTU is one of the largest research institutions in the Czech Republic, and ranks as a major research institution in world terms. It carries out research in a wide range of fields of engineering. Basic and applied research have been and will continue to be major activities in the long term. More than 700 scientific and research projects are being worked on at CTU. Research is carried out not only at all eight faculties of the university, but also at university institutes: the Klokner Institute, the Masaryk Institute of Advanced Studies, and the Institute of Technical and Experimental Physics. CTU has many centres for basic and applied research, where research is carried out on an excellent international level.

An outstanding Information and Communication Technology infrastructure is a basic part of the university's strategy. High-quality ICT forms the basis for collecting, analyzing and processing valid information. In 2012, the CTU Computing and Information Centre was awarded the following quality certificates: ISO 9001:2009 Quality Management System, ISO 20 000 Information Technology – Service Management System, and ISO 27 000 Information Security Management System.

Lifelong learning

CTU is also very active in the field of lifelong learning. For its future students, it organizes preparatory courses for the entrance examinations. For the university's graduates, it offers courses aimed at extending their knowledge and skills in a specific field. For working engineers, it offers professionally-oriented courses in technical fields.

CTU participates in the so-called University of the Third Age, offering study courses for seniors who consider that further education is essential for a full life. The students work on extending their specialist knowledge and professional skills. ■

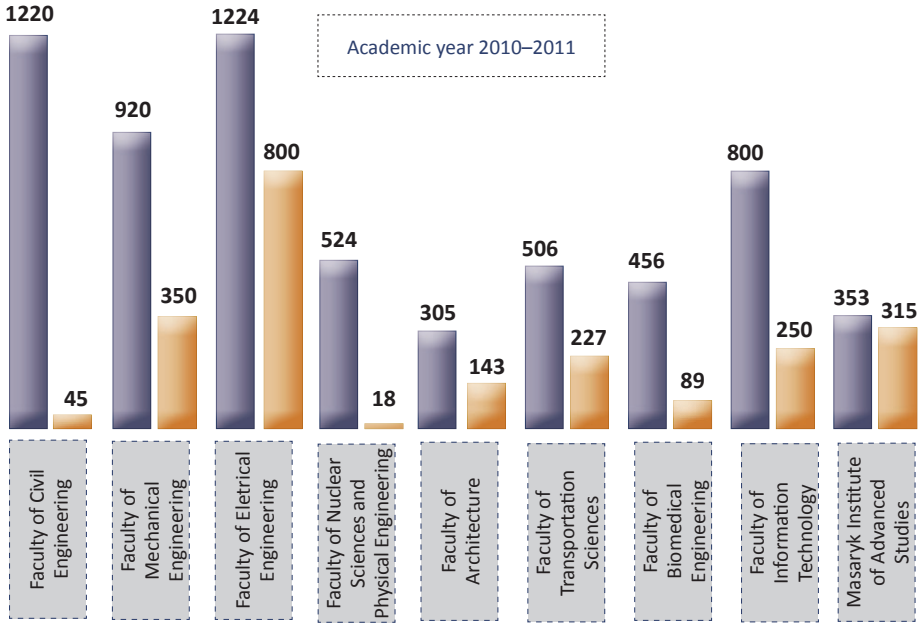
CONSIDERABLE INTEREST IN STUDYING AT CTU

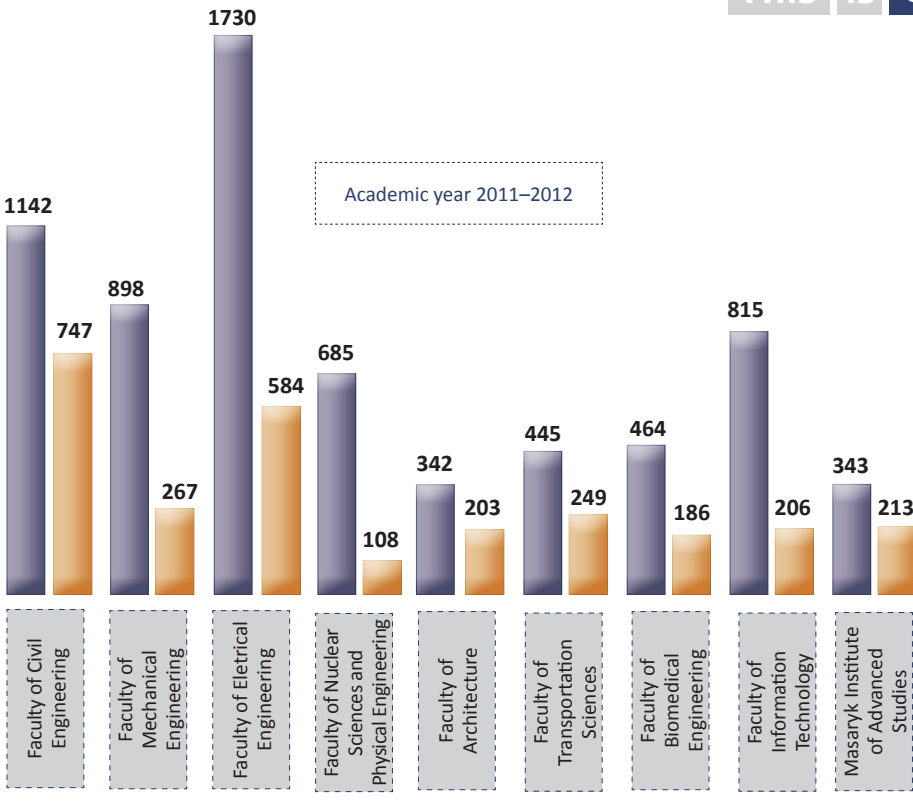
At CTU in Prague, you can study at bachelor, master or doctoral level. We offer three-year and four-year bachelor programmes, leading to a Bc. degree, followed by one-and-a-half or two-year programmes leading to an Ing. or Ing. arch. degree, equivalent to a master's degree, and a three- or four-year programme leading to a PhD degree.

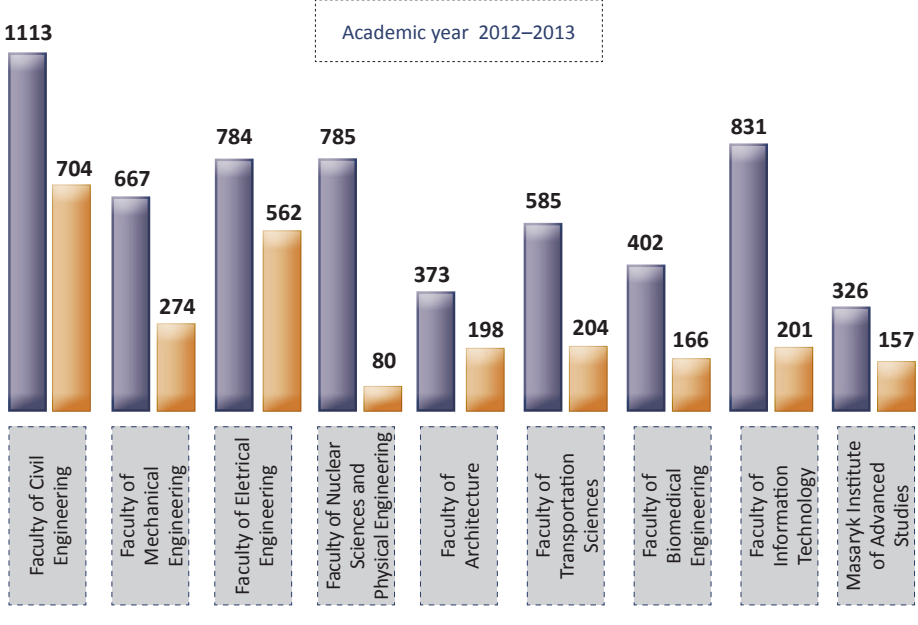
Candidates interested in studying in a foreign language can choose from the study programmes offered in English. Within the framework of their study programme, all students have the opportunity to study abroad in Europe or elsewhere in the world, without needing to extend their study period. There continues to be considerable interest in studying at CTU. The numbers of new students have generally held steady, in spite of the dip in the numbers of secondary school leavers in the Czech Republic in recent years.

In the 2009/2010 academic year, 9 477 new students registered for bachelor and master's study programmes at CTU. In 2010/2011, there were 8 545 new students. A year later there were 9 627 new students, and 8 412 new students registered in 2012/2013. An overview of the numbers of new students in bachelor and master's programmes, on a faculty-by-faculty basis (plus the Masaryk Institute of Advanced Studies), is shown here in graphical form. ■

Numbers of new students in bachelor and master's programmes




Academic year 2011–2012
1142
747
898
267
1730
584
685
108
342
203
445
249
464
186
815
206
343
213
Faculty of Civil Engineering
Faculty of Mechanical Engineering
Faculty of Eletrical Engineering
Faculty of Nuclear Sciences and Physical Engineering
Faculty of Architecture
Faculty of Transportation Sciences
Faculty of Biomedical Engineering
Faculty of Information Technology
Masaryk Institute of Advanced Studies


Academic year 2012–2013
1113
704
667
274
784
562
785
80
373
198
585
204
402
166
831
201
326
157
Faculty of Civil Engineering
Faculty of Mechanical Engineering
Faculty of Eletrical Engineering
Faculty of Nuclear Sciences and Physical Engineering
Faculty of Architecture
Faculty of Transportation Sciences
Faculty of Biomedical Engineering
Faculty of Information Technology
Masaryk Institute of Advanced Studies

CTU CarTech/Formula Student- a very successful activity of CTU students (21st position in the world rankings out of more than 500 teams)
Photo from Hockenheimring, Germany:
© FSG, Grams


CREATING A FUTURE FOR

Faculty of Civil Engineering

The Faculty of Civil Engineering is one of the largest faculties of CTU. The academic community comprises approximately 5 500 students and 400 teaching and research staff. The Faculty is one of the largest schools providing civil engineering university education world-wide. Over the years, graduates from the school have created engineering works which have laid grounds for the school's famous historical tradition. Keeping with the tradition of excellence, today's graduates exhibit a high quality of engineering craftsmanship and skills. The Faculty has set up a modern system of organization of instruction based upon a greater flexibility of course selection for the final two years of study, and scheduling of courses according to students' individual interests. Therefore, the Faculty prepares its students for top positions in the practical domain.

http://www.fsv.cvut.cz

Faculty of Mechanical Engineering

The Faculty of Mechanical Engineering is a constituent of the oldest civil technical university in Central Europe established in 1707. Mechanical engineering as an independent field of study began to be taught at this school in 1864 and consequently this year is considered as the date of the establishment of the Faculty of Mechanical Engineering. The contemporary Faculty provides technical education on a university level and educates specialists in many fields of mechanical engineering. The aim of the contemporary Faculty is to be a peak educational and research establishment recognized both in the Czech Republic and abroad. The Faculty is involved in the process of harmonization of the European Educational and Research Area in order to be fully compatible with the European system and also to be attractive to its students and to comply with the demands of society. At present 32 professors, 79 associate professors, and 175 teaching assistants, who are also involved in a number of research and development projects, work in 15 departments and 6 research centres.

http://www3.fs.cvut.cz/

Faculty of Eletrical Engineering

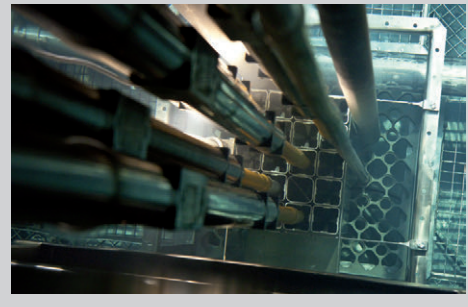
The Faculty of Electrical Engineering offers first-class education in the fields of electrical engineering, telecommunications, automation, informatics and computer science and engineering. The Faculty alone ranks among the top 5 research institutions in the Czech Republic and generates about 30% of the research output of the whole CTU. The Faculty has extensive research collaboration with top universities and research institutions worldwide, offers innovative solutions to industrial partners, military and security institutions. Its graduates find top jobs in industry, research institutions, and at universities in the Czech Republic and worldwide. Since 1950, the Faculty has awarded more than 30 000 diplomas which were always considered the benchmark of quality. At present, the Faculty has approximately 5 000 students: 3 106 undergraduate (Bc.), 1 398 master (Ing) and 601 PhD (424 full-time, 177 part-time; incl. 63 international students). Academic staff: total 600 (53 professors, 100 associate professors, 250 assistant professors and 200 researchers).

http://www.fel.cvut.cz/

Faculty of Nuclear Sciences and Physical Engineering

The Faculty of Nuclear Sciences and Physical Engineering was established in 1955, as a part of Charles University, but in 1959 became a new special faculty of CTU. The establishment of the Faculty was connected with the beginning of a new era of the peaceful use of nuclear energy. Later, newly developed areas of applied physics, e.g. plasma and solid state physics, lasers, cosmic research, etc., were included in the Faculty curricula. In the last fifteen years the rapidly developing branches of mathematical and software engineering, interdisciplinary applications in ecology, medicine, economics and archeology have also been evolved.

The Faculty is equipped with several large research facilities, including the VR-1 training nuclear reactor, scanning electron microscopes, high power laser systems, computational and advanced radiochemical laboratories, a satellite laser ranging station (Helwan, Egypt), etc.



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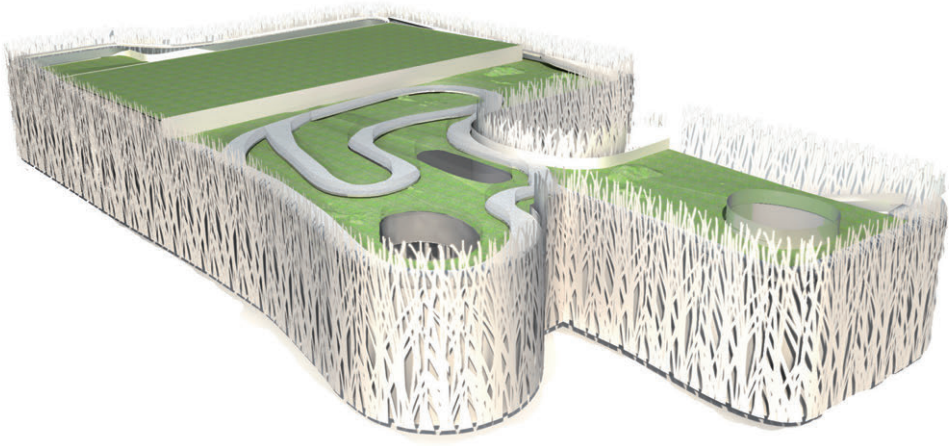
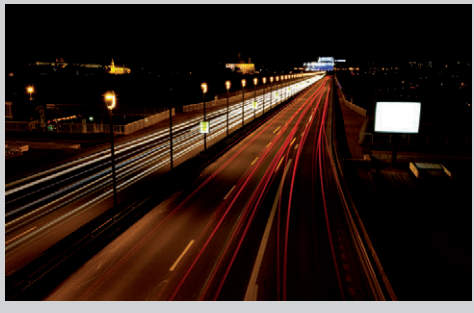


Faculty of Architecture

The Faculty of Architecture provides education in accredited bachelor and master degree programmes in Architecture and Urbanism and in Design, and in the accredited doctoral degree programme in Architecture and Urbanism, divided into Urban Design and Spatial Planning, Architecture, Theory and Design, History of Architecture and Monument Conservation, and Architecture, Building and Technology. University education in architecture and design develops students' creative abilities, and prepares them to be good specialists with the range of knowledge and skills required in their field of future work.

http://www.fa.cvut.cz/

Faculty of Transportation Sciences



The mission of the Faculty is to educate students, carry out scientific research and investigate projects in the field of transportation, taking into account market requirements, with an emphasis on state-of-the-art technologies, intelligent transportation systems, economics, relations between transportation and the environment, security engineering, etc. Over 1 600 students in bachelor, master's and PhD programs benefit from project-oriented studies which enable team work on transport projects under the supervision of experienced specialists. After 20 years of its existence, the Faculty has gained a dominant position in the field of university education in transportation studies in the Czech Republic. Its graduates participate in major national and international projects and hold important positions in the private sector and the public sector.

http://www.fd.cvut.cz/

Faculty of Biomedical Engineering

The Faculty of Biomedical Engineering is a dynamically developing young school, considered as an integral part of the University. It enjoys great popularity among students, and industry, research institutions, health care facilities and medical faculties are also interested in collaboration. The establishment and development of the Faculty is closely connected with the advances in medicine in the 21st century. Biomedical engineering is an interdisciplinary field bringing together engineering, physical, mathematical and biological experience and skills in order to solve practical problems in medicine. At present, the Faculty offers three study programmes with eight bachelor and four master study branches, and a doctoral study program. For self-paying students, the Faculty also offers study programmes in English and Russian languages.

http://www.fbmi.cvut.cz/

Faculty of Information Technology

The Faculty of Information Technology celebrated its fourth anniversary in July 2013, and is the youngest of the CTU faculties. Its foundation in 2009 reflected a more than 45-year-long history of teaching and research in computer science and engineering at CTU, and confirmed the maturity of the ICT domain as a specific research and educational field. The Faculty offers an attractive modern programme in Informatics for all study cycles (i.e. Bc./MSc/PhD) that equips graduates with a set of theoretical and practical knowledge and enables them to solve real-world problems using engineering methods and computers, or to study and develop theoretical parts of computer science. Rapid growth has shown the Faculty's high potential: currently, there are 1 641 bachelor, 466 master and 52 PhD students, while the academic staff consists of 8 professors, 12 associate professors, 73 assistant professors and 26 researchers.

http://fit.cvut.cz/

HIGHER EDUCATION INSTITUTES AND OTHER RESEARCH UNITS

Institute of Experimental and Applied Physics (IEAP)
The IEAP is a scientific-academic unit of the CTU oriented on the Physics of the Microworld and its applications. At the research level, the Institute bases its activity on the following long-term programs: Fundamental experiments in Physics of the Microworld, the ATLAS experiment at LHC at CERN, Cooperation with CERN, the Materials Analysis and Characterization Research Center, and the Astroparticle and Astrophysics Experimental Research Centre.
http://www.utef.cvut.cz

Klokner Institute
This Institute (established in 1921) was the first research institute to be set up at CTU and one of the four oldest self-standing research institutes in Europe. Main goals: Comprehensive assessment of the reliability and risks of civil engineering structures in response to the effects of exceptional loads and of the environment; Material engineering in the field of silicate and polymer composites; Developing a system for long-term monitoring of the behavior of building structures.
http://www.klok.cvut.cz/

Masaryk Institute of Advanced Studies (MIAS)
MIAS was founded in 1992 as a university institute of CTU that focused on lifelong learning programmes. The present mission of the institute is to provide education in economics, management, languages, history, and pedagogy for students of engineering. With this in mind, it offers a portfolio of six bachelor, master, and doctoral study programmes, which are attended by some 1 200 students. The institute cooperates with CTU faculties as well as with Czech and foreign universities, industrial companies, state administration institutions and prominent Czech and foreign experts.
http://www.muvs.cvut.cz

Czech Institute of Informatics, Robotics and Cybernetics (CIIRC)
The mission of CIIRC is to create an environment for conducting internationally competitive research, attract top quality personalities and open the possibility for them to participate in educating excellent master level and PhD level students at several CTU faculties.
http://www.ciirc.cvut.cz

University Centre for Energy Efficient Buildings (UCEEB)
The Centre is an interdisciplinary research facility of CTU. The main focus is on environment-friendly energy-efficient buildings providing a healthy indoor environment. The Centre will bring together a critical mass of knowledge from civil engineering, mechanical engineering, material science, electrical engineering and biomedicine needed to fulfill its mission – to support the introduction to the market of environment-friendly energy--efficient buildings providing a healthy indoor environment.
http://uceeb.cz

Institute of Physical Education and Sport
http://www.utvs.cvut.cz/

We provide high-quality university education through an extensive portfolio of primarily engineering branches of study, conduct basic and applied research and numerous scientific projects with great emphasis on industrial use and applications. We cooperate closely with both domestic and foreign-based institutions.

Address: The Czech Technical University in Prague
Zikova 4, 166 36 Prague 6, Czech Republic

http://www.cvut.cz

CTU Board of Directors

The CTU Board of Directors expresses its views especially on the long-term plan of the university and on other basic issues concerning the university. The Board is made up of people from public life and from the engineering industry. The members are top managers of leading industrial companies and representatives of professional associations. The Board of Directors expresses its view on the university budget, on the CTU annual activity report and the CTU annual financial report, and on the results of evaluations of the university's activities. Members of the Board are appointed and removed from office by the Minister of Education, Youth and Sport, in consultation with the rector of the university. People employed by the university may not be appointed members of the Board of Directors. ■

THE ACADEMIC SENATE

The Academic Senate is an autonomous executive organ of the CTU community. AS is elected by the academic community in such a way that each faculty is represented by three members of the academic staff and two students. The Rector's Office, University Institutes and other CTU constituent parts are represented by two members of the academic staff and one student. CTU AS ratifies internal regulations of the University and its constituent parts, ratifies the budget of the University proposed by the Rector and monitors the utilization of funds, as well as approving the CTU annual report and the CTU financial report proposed by the Rector. AS is elected for a three-year period.

PLANS AND DISCUSSIONS...

Prof. Ing. Petr Konvalinka, CSc., head of the Experimental Centre, Faculty of Civil Engineering, is chairman of the CTU Academic Senate and a member of the Rector's Board.

In what ways does the Academic Senate of CTU, with representatives from the academic staff and students of all eight faculties, help to improve the environment and the facilities for the students and staff of the university?

The Academic Senate of CTU contributes not only by putting pressure on the management, but also by setting the parameters for the university budget. However, due to the significant underfunding of public universities, there is limited scope for manoeuvering the budget. A model example of what we have been able to do is the CTU Lion Cubs kindergarten, which has been set up and put into operation. It was set up on the initiative of a group of parents, who are scientific workers at the university, with major support from the Academic Senate of CTU. Without this support and an annual contribution of a million crowns from the CTU budget towards operating the kindergarten, it would not have been possible to establish the kindergarten or to operate it.

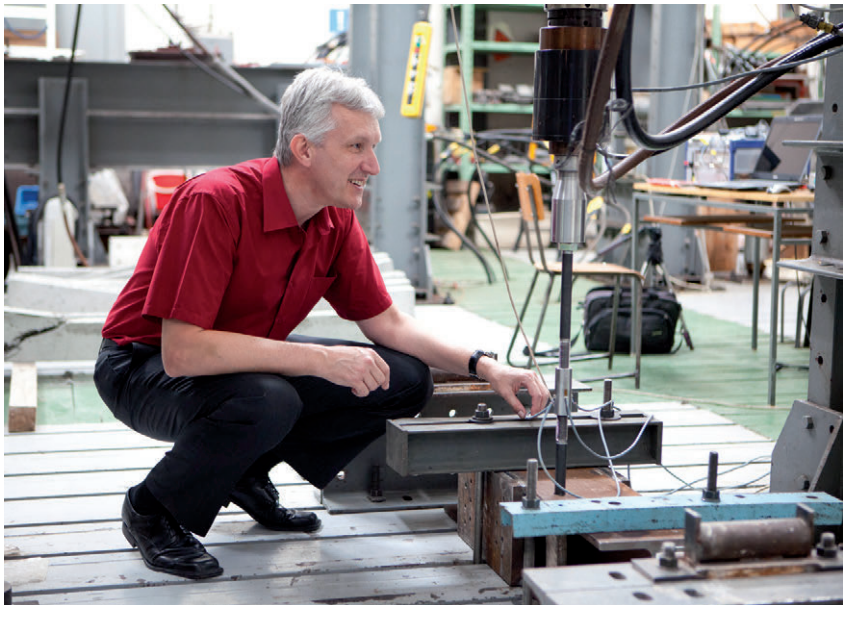
Do you get involved in questions of improving the quality of the study experience, and the conditions for research?

We deal with these questions practically all the time. Our efforts are aimed at

underpinning the excellence of CTU as a teaching instituion and in its research. In many ways, this has been going well. The university has a good name among applicants from the Czech Republic and Slovakia, and it is also rated highly by other students from abroad. We try to motivate improvements for studying and for doing research by targetted planning in the CTU Institutional Development Plan, in which the Academic Senate of CTU places most emphasis on two areas: teaching and research. In the last five years, we have managed to equip teaching labs and research labs with instruments and equipment costing more than CzK 250 million.

Can you give some specific examples of things that you have worked on in the senate meetings, explaining why and giving some results?

The functioning of an institution like CTU requires many formal transactions by the Academic Senate, behind which there is a lot of discussion. In particular, this concerns legislative and financial documentation for the university, and discussing and approving documentation for the faculties and institutes. In addition, the senate works on concepts and plans, for example the long-term plan for teaching, scientific, artistic and other activities, and oversees the development of the university and its day-to-day operations. Let me give some examples of things we have dealt with intensively: the emergence of a new faculty focusing on information technology; the construction of the CTU New Building, which houses the Faculty of Architecture and the new Faculty of Information Technology; the Czech Institute of Informatics, Robotics and Cybernetics project, among other activities. ■



Professor Petr Konvalinka, chairman of the CTU Academic Senate, head of the Experimental Centre, Faculty of Civil Engineering, in the laboratory.

2 Study and Student Affairs

OUR TREND: PROGRAMMES IN FOREIGN LANGUAGES

What defines the quality of the study programmes at CTU, and ensures that the University's graduates generally find good jobs?
The quality of the study experience doesn't come only from the academic staff. It is also influenced by the infrastructure that is provided, by the modern laboratories for experimental work, by the support for student mobility, etc. These are elements that contribute to the personal development and the employability of our graduates.

What changes have there been in the composition of the study programmes offered by the faculties of CTU? Which changes have interested applicants most?
In 2012 and 2013, 163 study programmes and specializations were reaccredited, had their accreditation extended, or were newly accredited. The biggest development and also the biggest increase in applicants has been at the Faculty of Biomedical Engineering, which had a number of programmes reaccredited or had the accreditation extended: for example Health Laboratory Technician, Biomedical Informatics, Geomatics, Optics and Optometry. The Faculty has also prepared a new study programme under the title Biomedicinskaja i klinečeskaja technika, in Russian language, and Biomedicinskij inžener. There has also been a big growth in student numbers at the Masaryk Institute of Advanced Studies, with its economics-oriented programmes in Economics and Management, with study profiles in Management and Economics of an Industrial Company, and in Human Resources Management in Industrial Companies, as well as its programme in Managing Development Projects, with study profiles in Innovation Project Management and in Management of Regional Projects. The Faculty of Information Technology has also been registering a big increase in the numbers of applicants, even without changing its accredited study programmes and profiles.

In the 2012/2013 academic year, seventy study programmes were offered in English language or in another foreign language. Will this offer be extended?
In future academic years, we are reckoning to extend the number of programmes offered in foreign languages. However, one of the prerequisites is to have enough academic staff members who are qualified not only academically, but also linguistically. The Faculties give their support to study programmes for self-funding students in a foreign language.

Does the university use the potentialities of its expert staff for other educational activities apart from bachelor, master's and doctoral study programmes?
The Faculties offer further education courses for their students and staff, and also for others. In the framework of lifelong learning, the faculties provide teachers and facilities for courses open to all groups of people. The courses are professionally-oriented and lead to further skills and qualifications for the successful participants. There are also courses for seniors, and preparatory courses for the faculty entrance examinations for secondary school students. ■

Assoc. Prof. Ing. Josef Jettmar, CSc.
Vice-Rector for Education and Student Affairs
Head, Department of Geotechnics, Faculty of Civil Engineering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ORGANIZATION OF STUDY PROGRAMMES

CTU offers accredited bachelor, master and PhD study programmes. Each faculty, and also the Masaryk Institute of Advanced Studies, offers and administers a range of its own programmes.

Bachelor study programmes
The standard length of a bachelor study programme is 3 or 4 years. The study plan includes some optional courses and a final bachelor project. By their choice of optional courses and their final project, students are able to shape their studies in accordance with their own interests.
Bachelor students are required to pass language tests in two foreign languages. Students are recommended to spend at least one month of their studies within the framework of an exchange programme at a foreign university. A bachelor study programme is duly completed by the state bachelor examination.
All graduates automatically receive a Diploma Supplement, which specifies that the title Bc. is a bachelor degree.

Master study programmes
Master study programmes are open to bachelor graduates. The standard length of a master study programme is 1.5 or 2 or 3 years. The obligatory courses in a master study programme ensure that the programme is challenging and of high quality. Work on a scientific project (or a creative project) forms an integral part of each master study programme.
We recommend students to study for at least one semester at another university, preferably abroad. Special attention is given to developing students' presentation, communication and managerial skills.
Graduates are awarded the title Ing. (i.e. engineer). At the Faculty of Architecture and at the Faculty of Civil Engineering (study programme in Architecture and Construction) the title awarded is Ing. arch.
All graduates automatically receive a Diploma Supplement, which specifies that the title Ing. or Ing. arch. is a master degree.

Doctoral study programmes
The standard length of a PhD study programme is 3 or 4 years. In the education of doctoral students, the key personality is the supervisor, i.e. a teacher with research and teaching qualifications at the level of professor, associate professor or senior scientific worker. At least a one-semester study stay at a foreign university forms a recommended part of the programme.
All doctoral study programmes at CTU are also accredited and offered in English language. ■

NUMBERS OF STUDENTS IN ACCREDITED STUDY PROGRAMMES

	Bachelor studies	Master's studies	Follow-up master's studies	Doctoral studies	TOTAL
Faculty of Civil Engineering					
technical studies	3 473	0	1 543	511	5 527
Faculty of Mechanical Engineering					
technical studies	1690	39	579	312	2 620
Faculty of Electrical Engineering					
natural sciences	246	0	299	0	545
technical studies	1 613 193	0 0	947	440	3 193
Faculty of Nuclear Sciences and Physical Engineering					
technical studies	1 160	0	221	303	1 684
Faculty of Architecture					
technical studies	875	0	631	179	1 685
arts and cultural studies	110	0	19	0	129
Faculty of Transportation Sciences					
technical studies	1243	0	482	151	1876
Faculty of Biomedical Engineering					
technical studies	557	0	338	85	980
health care, medical and pharmaceutical studies	417	0	0	0	417
Faculty of Information Technology					
natural sciences	1641	0	466	52	2 159
Klokner Institute, Masaryk Institute of Advanced Studies					
technical studies	0	0	381	14	395
social sciences, social services	0	0	0	2	2
economics	537	0	0	5	542
teacher education, special education and social care	392	0	0	0	392
CELKEM	**14 147**	**39**	**5906**	**2 054**	**22 146**

FEATURES OF THE CREDIT SYSTEM AT CTU IN PRAGUE

A unified credit system is used to quantify the study load of each course that is taken. The credit system at CTU is compatible with ECTS (the European Credit Transfer System), which facilitates student mobility within the framework of European programmes. At CTU, ECTS is used mainly for credit accumulation; the transfer function of the ECTS system is used mainly for foreign students. The credit system facilitates credit transfer when CTU students go on exchanges in the framework of the Erasmus programme.
CTU has held the Diploma Supplement Label certificate since 2010. ■

STUDY PROGRAMMES THAT CAN BE STUDIED IN ENGLISH

Faculty of Civil Engineering

Bachelor Degree
- Civil Engineering

Master Degree
- Civil Engineering

Doctoral Degree
- Civil Engineering
- Geodesy and Cartography

Faculty of Mechanical Engineering

Bachelor Degree
- Mechanical Engineering
- Theoretical Fundamentals of Mechanical Engineering
- Production and Economics in Engineering

Master Degree
- Mechanical Engineering
- Master in Automotive Engineering
- Intelligent Buildings
- Nuclear Power Energy Equipment

Doctoral Degree
- Mechanical Engineering

Faculty of Electrical Engineering

Bachelor Degree
- Electrical Engineering, Power Engineering and Management
- Communications, Multimedia and Electronics
- Cybernetics and Robotics
- Open Informatics

Master Degree
- Electrical Engineering, Power Engineering and Management
- Communications, Multimedia and Electronics
- Cybernetics and Robotics
- Open Informatics
- Biomedical Engineering and Informatics

Doctoral Degree
- Electrical Engineering and Information Technology

Faculty of Nuclear Sciences and Physical Engineering

Master Degree
- Nuclear Sciences and Physical Engineering

Doctoral Degree
- Nuclear Sciences and Physical Engineering

Faculty of Architecture

Master Degree
- Architecture and Urbanism

Doctoral Degree
- Architecture and Urbanism

Faculty of Transportation Sciences

Master Degree
- Intelligent Transport Systems
- Transportation and Logistic Systems

Faculty of Biomedical Engineering

Bachelor Degree
- Biomedical and Clinical Technology

Master Degree
- Biomedical and Clinical Technology

Doctoral Degree
- Biomedical and Clinical Technology

Faculty of Information Technology

Bachelor Degree
- Informatics

Master Degree
- Informatics

Doctoral Degree
- Informatics

SPECIAL STUDY PROGRAMMES

ACADEMIC COOPERATION BETWEEN EUROPE AND THE REST OF THE WORLD

Erasmus Mundus Degree Programmes

Faculty of Civil Engineering

- SUSCOS – Master in Sustainable Constructions under Natural Hazards and Catastrophic Events

The SUSCOS Sustainable Constructions under Natural Hazards and Catastrophic Events program is an Erasmus Mundus Master Course provided by six partner universities (Czech Technical University, University of Coimbra, University of Liege, Politehnica University of Timisoara, Lulea University of Technology and University of Naples Federico II). Its aim is to provide students with the engineering ability and know-how to design and construct structures in an approach that balances economic, environmental and social aspects, enhancing the sustainability and competitiveness of the steel industry. The language of instruction is English. The degree awarded is a Master Degree, provided as a multiple diploma. The MSc programme lasts three semesters and is held on a rotating basis among the partners.

- SAHC – Advanced Master in Structural Analysis of Monuments and Historical Constructions

The Advanced Master's in Structural Analysis of Monuments and Historical Constructions is a Joint European Master Programme. The higher education institutions involved in the MSc (consortium institutions) are: University of Minho (Guimaraes, Portugal),

Czech Technical University in Prague, Technical University of Catalonia (Barcelona, Spain), University of Padova (Padova, Italy)

Faculty of Biomedical Engineering

- CEMACUBE – Common European Master Course in Biomedical Engineering

In September 2010 an Erasmus Mundus Master's programme called CEMACUBE (Common European MAster's CoUrse in Biomedical Engineering) started, when the grant application submitted by the University of Groningen and the University Medical Centre Groningen, was accepted. The goal of this programme is to prepare students from Europe and outside Europe for professions in biomedical engineering.
It is difficult for a single university to have enough knowledge of all sub-specialisations in biomedical engineering to teach their students on an adequate level. The required European scope is also difficult to gain when students stick to a single university. Therefore a consortium of 6 universities has joined their knowledge and specific expertise into a 2-year European Master's in biomedical engineering.

Partners:
RWTH Aachen, Germany
Ghent University, Belgium
Free University of Brussels (VUB), Belgium
Trinity College Dublin, Ireland
University Groningen, the Netherlands
Co-partners:
ETH Zurich, Switzerland
University of Calabria, Italy
Aalborg University, Denmark
Université de Technologie Compiègne, France
University of Strathclyde, UK
University of Patras, Greece
Technical University of Warsaw, Poland

Other Double/Joint/Multiple Degrees

Faculty of Civil Engineering

- Double Degree Master Program in Civil Engineering

Partners:
École Nationale Des Ponts et Chaussées (ENPC), France

- Double Degree Master Program in Civil Engineering

Partners:
Technische Universität München, Germany
Fakultät für Bauingenieur- und Vermessungswesen, Germany

- Double Degree Master Program in Civil Engineering

Partner:
École Centrale de Nantes, France

Faculty of Mechanical Engineering

- Double Degree Master of Automotive Engineering

Partners:
ENSTA, France
HAN, the Netherlands
IFP, France

Graduates of the attractive dual-degree Master's program in Transportation and Logistic Systems, at the University of Texas at El Paso, USA.

Faculty of Transportation Sciences

- A Master's degree (joint degree) in the field of Intelligent Transport Systems (ITS)

Partners:
University of Applied Sciences Technikum Wien in Vienna, Austria
Linköping University, Sweden

- Transatlantic full-time dual degree program in Transportation and Logistic Systems

Partners:
The University of Texas at El Paso, USA
Univerzita Žilina, Slovakia

Faculty of Electrical Engineering

- Erasmus Mundus Master Course- Joint European Master in Space Science and Technology (SpaceMaster)

Partners:
Luleå University of Technology (LTU), Sweden
Julius-Maximilian's University of Würzburg (JMUW), Germany
Cranfield University (CU), UK
Aalto University (Aalto), Finland
Université Paul Sabatier Toulouse III (UPS), France
University of Tokyo (Todai), Japan
Utah State University (USU), USA

Co-partners:
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

- Double Degree Master Program in Power Generation and Transportation

Partner:
Tomsk Polytechnic University (TPU), Russia


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2
110 377

NEW MODERN AND UNIQUE STUDY PROGRAMMES

Faculty of Civil Engineering
Two new study programmes illustrate the composition of the programmes and the courses that are offered in reaction to the current requirements of employers, and with a view to bringing the latest theoretical knowledge and specialist skills into the classroom: the professionally-oriented bachelor study programme in Implementing Building and Engineering Structures involves learning how to prepare building projects, and how to build and operate them, including protection and sustainable use of water resources. The master's study programme in Sustainable Constructions under Natural Hazards and Catastrophic Events, accredited within the framework of an Erasmus Mundus project, extends the range of study programmes offered in English language.

Master study programme Intelligent Buildings
This new interfaculty study programme leading to a Master´s degree is offered at the Faculty of Civil, Mechanical, and Electrical Engineering. It has been designed to meet the needs of talented students interested in the issue of intelligent buildings. Students will take three obligatory courses at each of the faculties, and will select from a range of optional courses. In addition, they will attend a design project and lab courses.

Faculty of Electrical Engineering
In 2013, new high-quality bachelor and master's study programmes in Open Electronic Systems were accredited.
A graduate from the bachelor programme has a broad and very versatile theoretical preparation in the fields of mathematics, physics, electromagnetic field theory, analog and digital circuit theory, systems theory, signal and communication processing, and theory of semi-conductor technology. The master's programme retains this great versatility and international openness. The teaching and learning methodology aims to educate the kind of graduate that is in demand for development and research teams and is sought out by supranational companies developing technologically and algorithmically top-end products.

Faculty of Nuclear Science and Physical Engineering
In 2012/2013, the Faculty started teaching some newly-accredited two-year master's study programmes. Increased emphasis has been placed on developing courses in innovative fields of study in which some courses began to be taught in recent years. For example, Physics and Technology of Thermonuclear Fusion, Optics and Nanostructures, Radiological Physics, and Applied Mathematical and Stochastic Methods.

Faculty of Mechanical Engineering
Aviation and Space Technology, a constituent of the all-university follow-up master's study programme in Aeronautics and Cosmonautics, is a new and innovative field of study. Students deepen their knowledge of aerodynamics, flight mechanics, basic cosmonautics, theory of engines, strength and lifetime of flight structures, flight electrotechnology and electronics, flight materials, technology of aircraft production, etc. Students learn the basic principles

of space technologies. This field of study also involves taking some more general engineering courses, for example operating aircraft technology, flight navigation and control systems, aircraft instrument systems, aircraft technology maintenance, etc.

Faculty of Biomedical Engineering

The newly set up Faculty received accreditation in 2009-2012 for study programmes in Optics and optometry, Biomedical informatics, Physiotherapy, Radiological assistant studies, Paramedical studies, and in Planning and managing crisis situations. Master's study programmes are offered in Civil emergency planning and Biomedical Engineering. The Faculty has received further accreditation for studies delivered in foreign languages (in English and in Russian), for master's studies in Biomedical engineering, Systems integration of processes in health services, and studies in Russian language for Biomedical technicians.

Faculty of Architecture

In the 2012/2013 academic year, a master degree programme in Design was opened at CTU in Prague. Graduates will be specialists in designing machinery, transportation technology, consumer products, and construction and interior elements. This interdisciplinary field of study links artistic knowledge and skills with technical and functional requirements, leading to the efficient design and manufacture of new products. A graduate from this programme will form a link between specialists in the development of new solutions and products, where emphasis is laid not only on aesthetic values, but also on innovative functionality, progressive production and cost-effectiveness. This field of study is based

on close collaboration among the Faculty of Architecture, the Faculty of Mechanical Engineering and the Faculty of Transportation Sciences. The current development of technology in the advanced countries indicates that new and innovative solutions to technical problems emerge from bringing together knowledge and skills from various fields and specializations.

Faculty of Transportation Sciences
The Faculty offers a coherent education programme in intelligent transportation systems (ITS). This programme is closely linked with practical applications and is aimed not only at Czech students but also at foreign students. The programme is taught only in English. Two new fields of study: Safety of Transport Vehicles and Transport Routes, and Security of Information and Telecommunication Systems. By offering modern and innovative study programmes, the Faculty of Transportation Sciences has overcome lack of interest in technical education, and the Faculty's graduates have no difficulty in finding good employment.

Faculty of Information Technology
In March 2013, the Czech Republic was hit by an unprecedented wave of cyber attacks blocking even the Prague Stock Exchange, the central bank and other websites. To prepare specialists that could mitigate such attacks or reduce possible damage, the Faculty offers a unique MSc specialization in Computer Security. A graduate from this programme will be e.g. acquainted with modern Internet technologies, advanced cryptology, security and secure programming, network and information security. A brand new programme in Bioinformatics prepared in cooperation with the Institute of Chemical Technology and the Czech Academy of Sciences has been submitted for accreditation. ■

MEASURES TO REDUCE FAILURE RATES

At each faculty of CTU, there are ongoing actions aimed at reducing failure rates, especially in bachelor study programmes. The main measures have involved preparing candidates for the entrance examinations through preparatory courses in mathematics, physics, etc., and setting higher entrance requirements as regards candidates' knowledge, skills and aptitude (talent tests, written entrance examinations, more stringent secondary school leaving examination result requirements, selection based on successful results in mathematics and physics olympiads and other competitions, study aptitude tests, etc.). Evaluations are being made of the causes of failure in examinations and of dropping out, especially in the first semester and in the first year of bachelor programmes. On the basis of these analyses, adjustments may be made to the way the curriculum is presented, with the use of preparatory courses, specialized courses, recommended optional courses, etc. CTU also offers comprehensive counselling services for students, aimed at dealing with a wide range of study problems that they may have. Experience shows that students use these services above all during the examination period. ■

THE JOSEF UNDERGROUND LABORATORY – A UNIQUE FACILITY

The main task of this facility is to provide practical on-site training for students, to support experimental research projects, and to contribute to better integration of university education, research and industrial experience.

The Josef Underground Laboratory is the first in the Czech Republic to provide underground research facilities:

- A working physical model that simulates the deposition of containers with spent nuclear fuel.
- A physical model will be made of Czech stoppers for sealing the entrance galleries to deep repositories for radioactive wastes, using sprayed bentonite. ■

OTHER EDUCATION ACTIVITIES AT CTU (OUTSIDE THE ACCREDITED STUDY PROGRAMMES)

The university organizes a large number of lifelong learning courses. In 2012 there were 154 profesionally-oriented courses, 56 general-interest courses, and 71 University of the Third Age courses, for seniors. These courses attracted a total of 4 250 participants. In comparison with 2011, the 2012 figures show overall growth of 32,76 % in the number of participants in lifelong learning courses.

Examples of other educational activities carried out by the CTU faculties in 2012

■ The Faculty of Civil Engineering organized specialized field trips in 2012, in the Czech Republic and abroad, a summer school in Telč under the title Architectural Drawing, and a summer school on Technical Equipment for Buildings for students in the last year of their master's study programme and doctoral students, dealing with TZB low-power systems and other topics. Four workshops were also held, including Superstudio, a 24-hour student workshop, 12 seminars, and lectures by experts from abroad, for example, a lecture on Geotechnical Problems of Mexico City, by Prof. Gabriel Auvinet, University of Mexico.

■ The Faculty of Electrical Engineering offered a preparatory course for the entrance test in mathematics, based on the secondary school syllabus, for prospective students of the faculty, and courses were also offered by the branch of the Czech Association of Scientific and Technical Societies at the Faculty of Electrical Engineering. The Faculty organized summer courses for newly-accepted students, consisting of consultancies in mathematics and also sports and physical activities. Students and staff took part in the Aurora 2012 specialized expedition to northern Europe, field trips were made to the three-kilometre XFEL laser at the DESY particle laboratory in Hamburg, and to the copper mine and the mion observatory at Pyhäsalmi. Physical Thursdays was a series of lectures for specialists. The student POSTER conference enabled students to present their research results. The Faculty also co-organized international summer schools in Microwave Technology and Optoelectronics at TU Darmstadt.

■ The Faculty of Information Technology co-organized a conference for PhD students from the Czech Republic and Slovakia on Computer Architecture and Diagnostics in 2012, and also the MELA Conference in Telč. Guest lecturers of the Faculty from abroad included: Prof. Ilya Levin (Tel-Aviv University, Israel), Claus Gittinger (eXept Software A, Germany) and Prof. Rajmund Ubar (Tallin Technical University). The Faculty hosted the following conferences with international participation: PPDD 2012, TOOLS 2012, PSC 2012 and LinuxDays 2012. A series of three Android Developer Meetup sessions were provided for young developers. A cycle of lectures on the history or mathematics, informatics and astronomy was organized for students and the expert public within the framework of the SEDMA seminar.


working
for the WORKING WORLD
FAKULTA INFORMAČNÍCH TECHNOLOGIÍ
Telecommunications
Data Centers
Managed & ICT Solutions
Cloud Computing


KONFERENCE
LAW FIT


Jan Václavík
LAW FIT


Pavel Brabenec

■ The Faculty of Architecture organized workshops, seminars and courses, for example the workshop on An Ageing Population – New Trends in the Design of Buidings for Seniors, A Communication Area in Schools as a Phenomenon that Determines Social Relations, and a workshop in La Tourette, France. The Faculty also collaborated on organizing the EMU Venice workshop (together with UPC Barcelona, TU Delft, IUAV Venice and KU Leuven), and organized the City Development V course. Three successful cycles of lectures were held, under the titles ARCHITECTURE versus DESIGN, CITY LANDSCAPE and MONUMENTS.

■ The Faculty of Transportation Sciences regularly participates in the MEPS (Middle European Planning Seminar) international transport engineering seminar. It organizes this seminar together with the University of Technology and Economics in Budapest and the Technical University of Vienna. Once a month, the Institute of Air Transport organizes specialist lectures and discussions on topical issues with leading experts from the field for students and aviation specialists. The Institute also organized a two-week course, in collaboration with the Faculties of Electrical Engineering and Mechanical Engineering, under the title Spaceflight/ Rocket Propulsion Lectures. In this course, some of the classes were taught by the outstanding American specialist Prof. John LaGraff, from the University of Syracuse, New York, a long-time NASA staffer. For the Ministry of the Interior of the Slovak Republic, the Institute of Air Transport provided a 3-day training course on Security for Public Officials for 66 technical workers employed to maintain the official aircraft of the President of the Slovak Republic.

■ The Faculty of Biomedical Engineering organized weekly seminars on Health Technology Assessment. Students of Biomedical Technology and staff members participated in a special course on developing scenarios for the CAE Healthcare artificial patient METI ECS simulator in Mainz. The Faculty organized the 5th annual Advances in Biomedical Engineering workshop on Managing and Evaluating Health-care Technology. In 2012, specialized courses were organized for bachelor, master's and PhD students and faculty staff on skills for practical application of programming products such as Matlab, Comsol Multiphysics, Simulink, the Matlab Signal Processing toolbox, Adobe Acrobat Pro XI, SolidWorks 2012 – 3D CAD, Siemens PLM Tecnomatix JACK SW for ergonomics, and cources in hospital information systems. ■

3

Science and Research

FROM NUCLEAR PHYSICS TO NANOSTRUCTURES

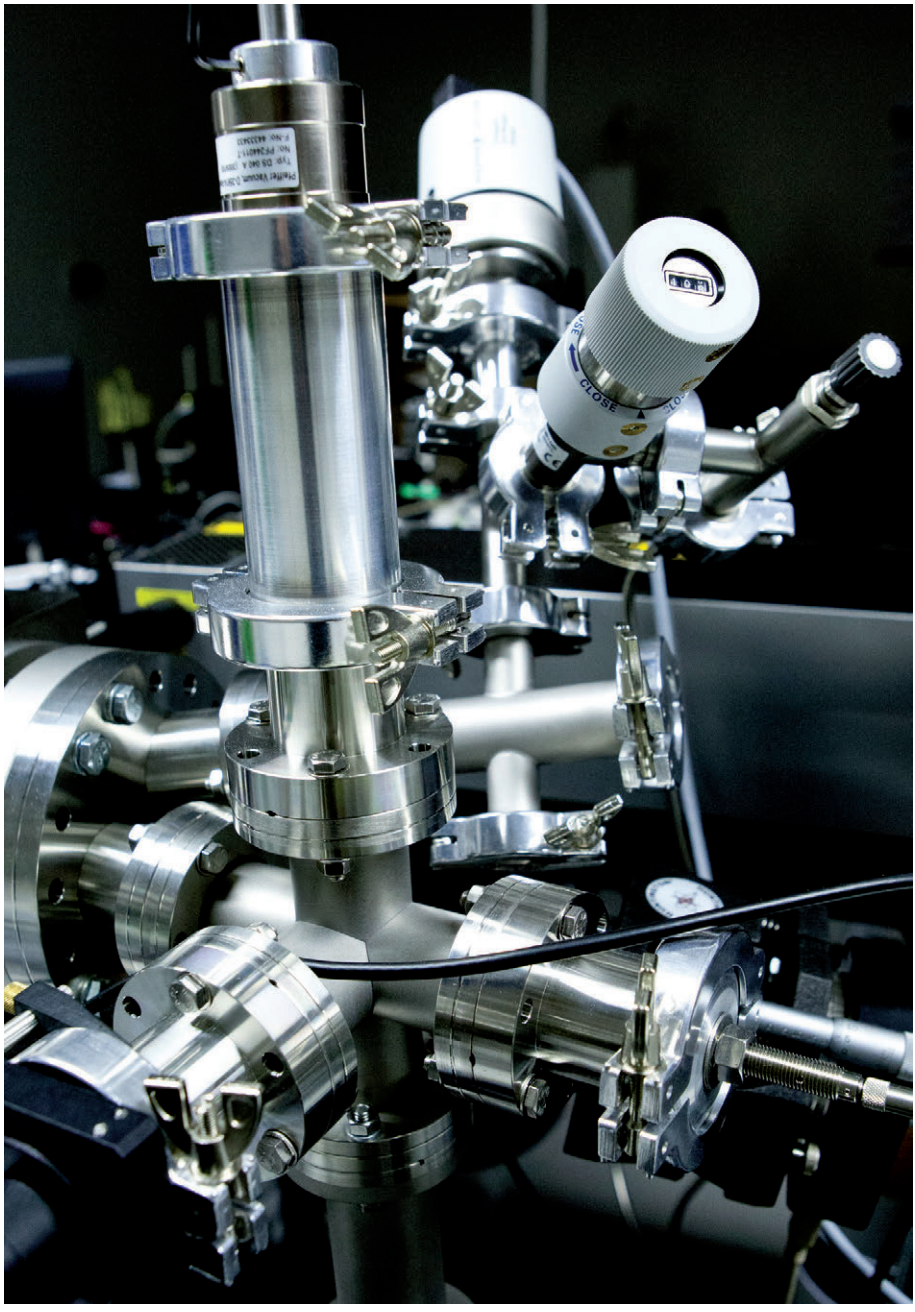
Science and research serve as visiting cards for most of the major universities in the world. What kinds of research topics are teams at CTU in Prague currently working on?
CTU is a university that carries out research on a broad range of topics. Its research can be divided into basic studies and applied studies. In basic research, CTU is particularly strong in the natural sciences, mainly physics and mathematics. The fields of physics that are intensively studied at the university include nuclear physics, particle physics, laser physics, and the physics of nanostructures and materials. Some of the results obtained in technical fields can also be classified as basic research. For example, some of the work done in cybernetics and informatics. In applied research, CTU achieves a large number of results. As examples, I can mention applications of research results in cybernetics and informatics, in civil engineering, mechanical engineering, electronics, and in developing computer programs.

You personally are actively involved in programmes carried out at the CERN European centre for nuclear research, in which scientists and technicians from CTU collaborate. Which projects do you rate most highly?
Our teams of scientists are participating in several experiments running at CERN. They are participating for example in the large-scale ALICE and ATLAS experiments in particle and nuclear physics, and in the AEGIS experiment investigating the gravitational interaction of antihydrogen. Teams from the Faculty of Nuclear Sciences and Physical Engineering and from the Institute of Technical and Experimental Physics have been working systematically on these long-term projects. I appreciate the work of all the teams, because I know from my personal experience that it is a long-distance race that bears fruit in the form of advances in physics only after many years of work. Developments need to be made in many fields of engineering and science to feed into these big experiments.

Are science and research being successfully integrated with university studies? Do the best students go on to study for a PhD, and then join the academic staff?
I think we are managing to integrate science and research into university studies by doing our best to involve gifted students in research work as early as we can, ideally while they are still on their bachelor programmes. Participating in an experiment gives students valuable experience that they can apply later in their scientific work. We try to get as many gifted students as possible to stay on and graduate from a doctoral study programme. The best of these PhD graduates can then stay on in their faculty. We try to provide financial support for gifted students participating in research within the framework of the Student Grant Competition.

In which fields can it be said that the scientific and research work being done here is excellent and on the highest international level?
I think that excellent, world-class research is being done in a number of fields. I would not like to overlook any of them, so I will just mention some examples: particle and nuclear physics, cybernetics, informatics, and physics of nanostructures. ■


EPA


CLOSE

SCIENTIFIC AND RESEARCH ACTIVITIES

We are among the largest research institutions not only in the Czech Republic but throughout the world. We cover a broad range of research in many fields of engineering. Basic and applied research have a long-term role at CTU. Research is carried out at all eight faculties, and also at the university institutes.

CTU in Prague has been taking a strategic approach to its scientific and research activities. In the area of basic research, emphasis is laid on theoretical and applied mathematics, as well as theoretical, experimental and applied studies in a broad range of fields of physics (nuclear physics, plasma physics, laser physics, physics of materials and solids, physical electronics, physical radiation and radiological physics). This wide range of research activities leads to and facilitates participation in many kinds of interdisciplinary studies and projects. Major programmes and projects that CTU is involved in include collaboration with CERN (the ongoing ATLAS, ALICE, CERES and DIRAC projects), and with the joint institute for nuclear research at Dubna, Fermilab (D0 project, Nova project), laser plasma projects (PALS), collaboration in the development of the ITER experiment, projects in the areas of nuclear reactors and fuel cycles, and also in other projects based on collaboration with a number of leading universities and research institutes abroad. Long-term collaboration with CERN has led to orders for Czech companies. Numerous scientific and research results have been transferred successfully into industrial and commercial applications. For example, laser applications, special materials for electronics, optoelectronics and optics, applications of holography, nanomaterials, and also software development. Other scientific and research results form elements of bigger development processes, and also lead indirectly to industrial and commercial applications (nuclear safety and radiation protection, various medical applications, development of materials, laser measurements, application of lasers in space research, etc.)

A total of 72 scientific conferences were organized or co-organized by the University in 2012. Of these conferences, 44 had more than 60 participants. 54 of the scientific conferences included participants from abroad.

CTU Scientific Council

The tasks of the CTU Scientific Council include negotiating the long-term plan that public universities are required to present, and approving study programmes. Members of the Scientific Council are distinguished representatives of the fields of specialization in which the University carries out its teaching, scientific, research, development, artistic and other creative activities. The personalities on the Scientific Council come not only from CTU, but also from other universities in the Czech Republic and abroad, as well as scientists and researchers from the Academy of Sciences of the Czech Republic, and also managers of major companies, banks, and leaders in other fields of activity for which CTU is educating specialists to work in industry, in commerce,

or in educating the next generation of scientists.

Rector of CTU's Prize for science and research

The Fund in Support of Scientific and Research Work is one of the sources used to motivate researchers. Every year, the rector of CTU awards the Rector's Prize in the following fields:

- outstanding scientific results
- practical application of research results
- a prestigious scientific publication
- an outstanding PhD thesis.

Linking research and creative work with the education process

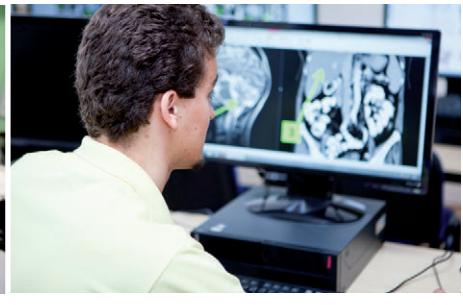
A basic concept in the education process at CTU in Prague is that students are educated to carry out scientific and research work, and are integrated into these activities at the University. There is an individual approach to students. The education process has been internationalized, and student mobility is integrated into the process. From the third year of their bachelor study programmes, students are integrated into work on a specific topic within a research project, and the topics of student research projects, bachelor projects and master's projects are directly linked with a larger project at the student's faculty. Active participation in scientific and applied projects is a basic requirement for students participating in a doctoral study programme. For master's programmes and doctoral programmes, this concept is being developed actively by means of funding through the successfully introduced Student Grant Competition. Students in master's study programmes can participate in the Student Scientific Competition for scientific and research projects. Talented bachelor programme students can work as student assistant researchers in one of the departments at their faculty. They can learn how to work on scientific projects and can help with experiments. Many of these students go on to study for a PhD.

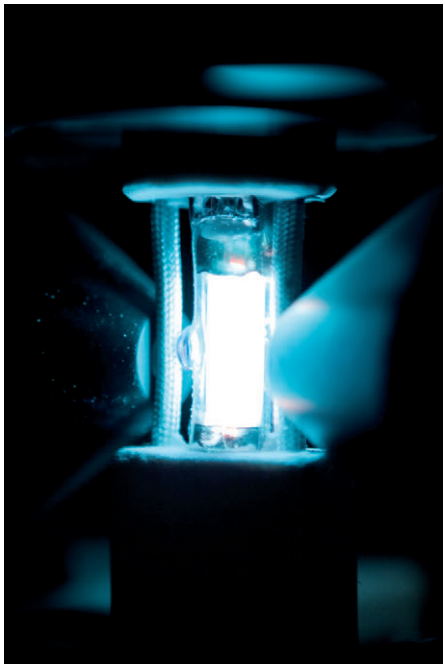
Funding for Science and Research

The total amount of funding earmarked for research, development and innovatoin in 2012 was CzK 1 206 067 904 on project work, and CzK 176 488 468 was paid to co-investigators and contractors.

Support for students in doctoral study programmes, and for post-docs

The University makes a special effort to provide good conditions for promising young teachers and researchers. The aim is to





improve students' skills and qualifications, and to enable them to earn scientific and teaching titles. The most successful graduates are encouraged to supervise doctoral students, and in some cases to join the teaching staff. A major part of these efforts involves creating conditions and contacts aimed at integrating students into teams working on top international research projects, and sending them to study and do research at partner institutions. The University does its best to provide funding and to set up a remuneration system for this category of scientific and research workers that will enable them to dedicate themselves fully to research and/or to teaching. The employment of post-docs as researchers is currently funded from Education for Competitiveness Operational Programme grants, and from the CRP programme.
Doctoral students receive scholarships, and are also supported by grants financed by the Student Grant Competition from funds for specific research.

Study programmes: to what extent do they deal with industrial and commercial applications?
An important position of industrial and commercial applications in the faculties' study programmes is ensured by bringing top experts from industry and commerce into the work done by the scientific councils of the faculties, and of each field of study, and into the advisory councils for doctoral studies. Experts from industry and commerce also teach courses and give lectures to students in bachelor, master's and PhD programmes, supervise bachelor and master's projects, and advise and teach PhD students.

Commercialization strategy
Close cooperation with industry and with other areas of public life forms a part of the long-term development plans of the CTU faculties. The University creates favourable conditions and provides long-term support for projects that can be applied in industry and commerce, and also for projects based on contracts with industrial and commercial companies. The commercialization strategy supports the provision of better and fuller information about the University's research projects, and about its research facilities that are available to be used for commercial purposes. This is an element in the CTU Strategy for Science, Research, Innovation and Creative Activities.

25 spin-off/start-up companies were supported by CTU in 2012.

Database of CTU offers, experts and devices (DNEP)

The DNEP database contains offers of results from research and scientific activities for industry in the framework of technology transfer, and for cooperation with other universities and research institutions in the Czech Republic and abroad. It provides an overview of experts in a wide range of fields of engineering, and of unique devices and instruments available at CTU. It is aimed at teachers, scientists and students of CTU, and also at the broader scientific community and other interested parties outside CTU (e.g., journalists). It is used inside and outside the University. The DNEP database program consists of two independent versions of the entries, in Czech and in English.
The database contains about 400 offers of collaboration.

CTU Patent Centre

Services offered:
Advisory services, consultations, talks
Protection of industrial rights
Searches on technical state, name searches, appraisals of the patent situation of products, ensuring the validity of protective documentation
Elaborating and submitting applications for inventions, industrial models, utility models, trademarks; representation in dealings with the relevant authorities
Observing deadlines for the protection of industrial rights, including deadlines for making administrative payments and maintenance payments
Applications for industrial rights abroad
Proposals for licensing agreements
Expert opinions – for individuals, for organizations and for courts of law, on the basis of authorization to provide expert opinions, evaluations of intangible assets.
The Patent Centre also provides services for clients from outside CTU in Prague. ■

CZECH INSTITUTE OF INFORMATICS, ROBOTICS AND CYBERNETICS

The Czech Institute of Informatics Robotics, and Cybernetics (CIIRC) was established on July 1, 2013.

The CIIRC mission is to:

- Create a research and teaching institute and environment heading for excellence, for quality and conducting internationally competitive research.
- Attract top quality personalities to CIIRC.
- Open the space for CIIRC personalities and CTU faculties allowing cooperation in top quality teaching and research with students at mainly master and PhD levels.
- Introduce managerial procedures into the inner academic body, the CIIRC Assembly (of top personalities), which will enable faster progress toward top quality results.
- Create an atmosphere and procedures in support of transfer of know-how to industry and elsewhere – and disseminate it.

CIIRC develops scientific disciplines in informatics, robotics and cybernetics in the broad sense and with overlap between fields of study. CIIRC offers internships and jobs to foreign applicants. It also supports stays by staff and students of CIIRC abroad, especially mutual exchanges of master's and doctoral students. It informs the international professional community about academic vacancies at CIIRC. In the sphere of its activities, CIIRC cooperates with other universities, scientific institutions, research institutes, industry and other organizations, both at home and abroad. ■

INSTITUTE OF EXPERIMENTAL AND APPLIED PHYSICS

The Institute is a scientific and academic unit of CTU working on the physics of the microworld and its applications. The Institute (founded in May 2002) has very close cooperation with CERN; the scientific cooperation partners are: ESA, Fraunhofer Institut, Friedrich-Alexander-Universität Erlangen-Nürnberg, the German Cancer Center, ILL Grenoble, SÚJV Dubna, University College London, the University of Alberta, the University of Heidelberg, the University of Houston, the University of Montreal, and others.

Basic Research:

Astroparticle & non-accelerator physics – Neutrino physics (NEMO3/SuperNEMO, TGV), Cosmic rays (CZELTA), Dark matter (PICASSO)

ATLAS at LHC –- SCT detection modules, Neutron shielding, Medipix radiation monitoring, Higgs boson physics

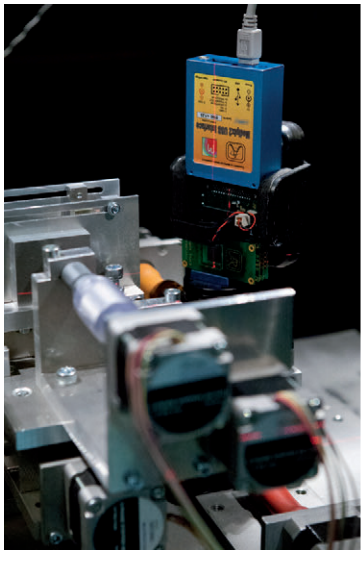
Nuclear spectroscopy – Fission fragment spectroscopy, Laser induced nuclear excitation, Ultra cold neutrons

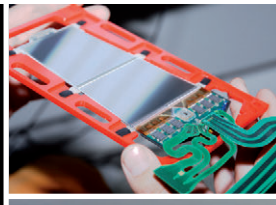
Applied Research:

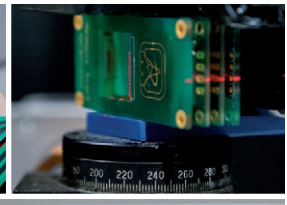
Radiation imaging – Medipix pixel detectors: SW, HW, X-ray radiography and tomography, Charged particle & neutron imaging, Biomedical imaging, Material science and defectoscopy.

R&D of semiconductor detectors – 3D and semi-3D detectors, Thermal neutron detectors, Room-temperature detectors, Instrumentation for detector testing.

Applied spectrometry – Material analysis (CINAA, XRF, Radon), Particle tracking and spectroscopy, Radiation in space (gamma, neutron, micro-sensor). ■







CENTRE OF VEHICLES FOR SUSTAINABLE MOBILITY

The main aim of the Centre of Vehicles for Sustainable Mobility project is to further enhance the level of applied research for the automotive industry by establishing the new premises of this Centre, which concentrates brains and new technologies at European level.

The Centre will provide facilities and resources for innovative research and for optimizing the concepts for automotive engines, including electric and hybrid units.

Work will be done on integrated control, fuel efficiency (concepts with the potential to reduce road vehicle fuel consumption by 15%), environment friendliness (EURO 6) and utility value.

The Centre aims to improve the competitiveness of Czech companies in the automotive sector. Specific applicable results will include: conceptual solutions of new internal combustion engines (ICE – downsizing by optimized boosting, new combustion systems, optimization of engines with a small number of cylinders), mechanical transmissions with power splitting, electric drives with power splitting and hybridization, and predictive or adaptive power control systems.

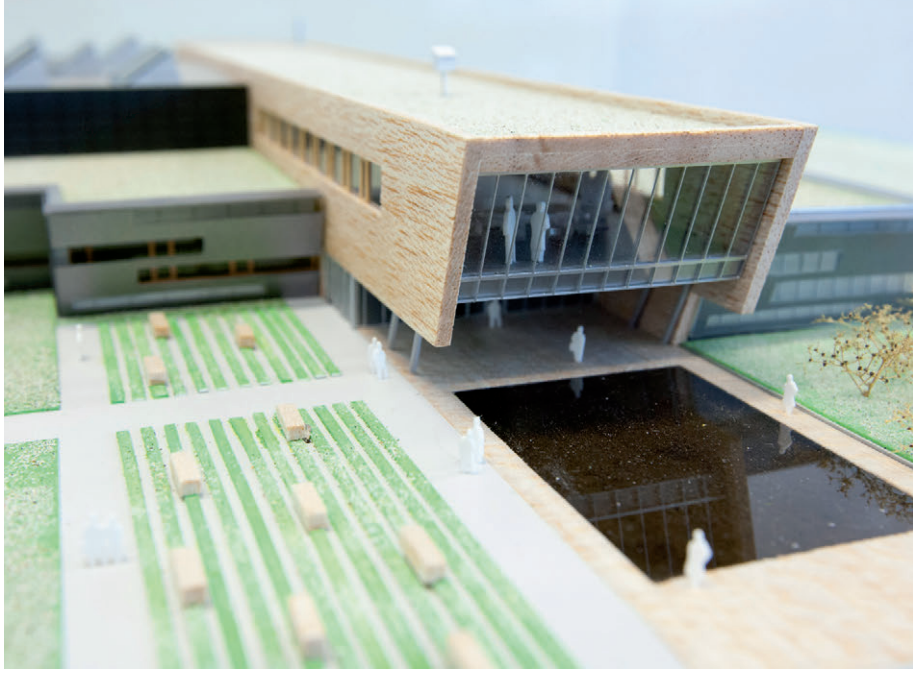
The Centre will enhance its collaboration and strengthen existing links with industrial and applied research companies and institutes. It will expand its range of activities, and will cooperate extensively in international R&D projects. ■

UNIVERSITY CENTRE FOR ENERGY EFFICIENT BUILDINGS

The University Centre for Energy Efficient Buildings (UCEEB) is an interdisciplinary research facility of the Czech Technical University in Prague. The main focus is on environment-friendly energy-efficient buildings that provide a healthy indoor environment.
The Centre is a sustainable building research facility that is unique in the region, bringing together the critical mass of knowledge from civil engineering, mechanical engineering, material science, electrical engineering and biomedicine that is needed to fulfill the Centre's mission – to support the introduction to the market of environment-friendly energy-efficient buildings that provide a healthy indoor environment.
UCEEB is located at Kladno-Buštěhrad, just outside Prague.

Research groups:

- Architecture and interaction of buildings with the environment
- Energy systems of buildings
- Quality of the indoor environment
- High performance building materials and structures
- Monitoring, diagnostics and smart control of buildings ■



KLOKNER INSTITUTE

The Klokner Institute was established in 1921 as the Research and Testing Institute of Materials and Building Structures. This was the first research institute to be established at CTU, and ranks among the four oldest independent scientific centres in Europe. The initiator, founder and first head of the institute was CTU Professor František Klokner.
The Institute has 4 specialized departments, an accredited laboratory and also a forensic department for diagnostics, failure analysis and tests of concrete, steel, timber and masonry structures and parts of structures.

Scientific and research activities
Results achieved in recent years confirm the Institute's unique standing in the Czech Republic and worldwide, namely in the following fields:

- Reliability theory of building structures.
- Diagnostics, monitoring and assessment of structures.
- Mechanics of composite materials, development and verification of new concrete technologies and new structural materials.
- Degradation of reinforced concrete and masonry structures due to exposure to the environment, and methods for redeveloping these structures and designing modern structures.
- Seismic and wind engineering. ■

EXAMPLES OF ACTIVITIES

Civil Engineering Faculty

The Faculty is one of four faculties that set up the new University Centre for Energy Efficient Buildings (UCEEB). This is an interdisciplinary research project dealing with energy-saving buildings that have a healthy interior environment and, at the same time, are environment-friendly.

The CIDEAS (Centre for Integrated Design of Advanced Structures) centre is a major outcome of the Faculty's collaboration with industrial partners in the area of applied research. In the period from 2005 to 2011, it carried out numerous research projects which led to specific industrial applications and also some patents. Close collaboration beween CIDEAS and leading construction companies, such as SKANSKA CZ, Metrostav, Eurovia, ŽPSV and other industrial partners, has led to ongoing collaborative projects. The experience that the Faculty has gained from the CIDEAS research centre has now led on to two major activities. The Faculty hosts the Grant Agency of the Czech Republic's Centre of Excellence for basic research. This is an outstanding and prestigious success for CTU in Prague. The project works on cumulative time-dependent processes in building materials and structures. The Faculty also coordinates the Centre for Efficient and Sustainable Transport Infrastructure (CESTI) Centre of Competence. The project works on technological innovations aimed at eliminating the bottlenecks in the present-day transport infrastructure.

The Centre for Experimental Geotechnology (CEG) is the final element in the reconstruction of the Josef Underground Laboratory complex, which is used for in situ instruction on underground structures, geology, geochemistry and geodesy. CEG offers facilities for working on national and international research projects, and for collaborating with the construction industry.

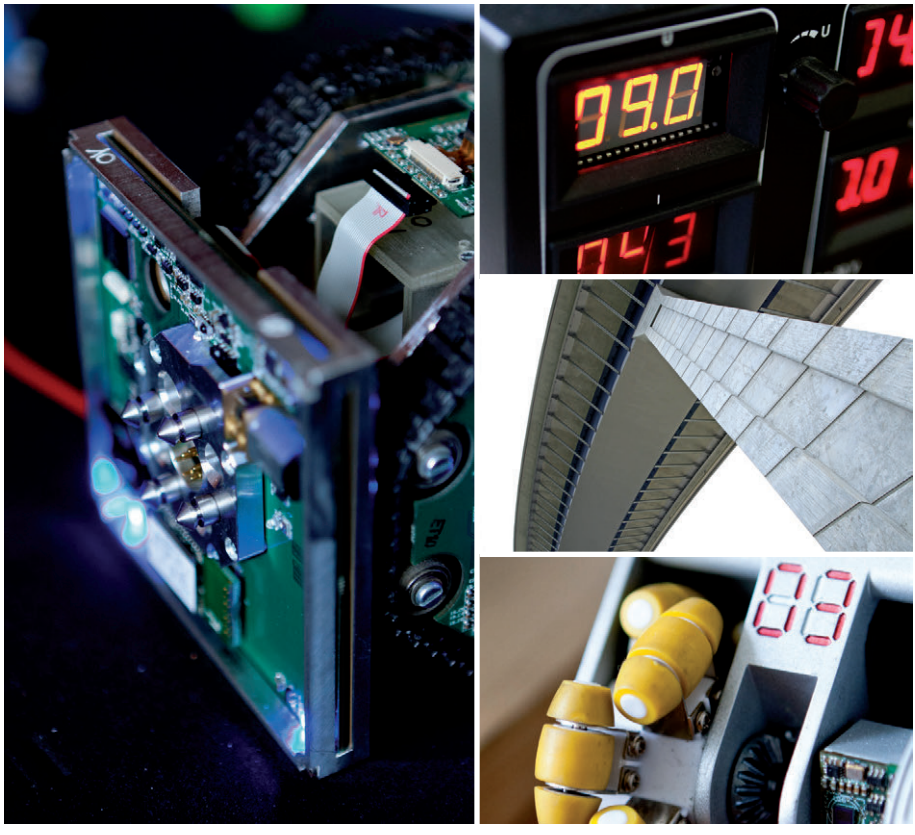
Faculty of Transportation Sciences
An agreement has been signed with the International University in Miami, Florida, to establish a Center of Excellence in Co-operative Intelligent Transportation (CECIT), where work will done on electronic toll systems, clever cities, and car-to-car and car-to-infrastructure communication. The Faculty has implemented a number of FP7 international research projects.

Faculty of Biomedical Engineering
The quality of the new Faculty's outputs has risen steeply. 93 high-impact papers and 24 books and book chapters have been published. Nine Grant Agency of the Czech Republic projects, as well as numerous ministry grant-funded projects and international projects have been won and then successfully implemented. The Faculty has co-organized 15 scientific conferences, seven of them with international participation, and several summer schools.

Ten research teams are working at the Faculty. Many research results have been implemented commercially;
19 utility models and 4 patents have been recognized, and also 46 functional samples.

Faculty of Information Technology
In science and research, the Faculty focuses on searches in text and tree structures, data compression, data mining, computer security, and digital design methodology.
The Faculty has engaged a number of young staff members who are very active in their field of specialization. A major step was to win two multi-year Technology Agency of the Czech Republic grants and a total of four long-term Grant Agency of the Czech Republic grants for studies of parallel algorithms, residual arithmetic, search algorithms & compression, and special algorithms in discrete mathematics. ■



CENTRES OF COMPETENCE

The new Centres of Competence at CTU were opened in 2012, after the Centres of Competence programme was set up by the Technology Agency of the Czech Republic as a public competition for research, development and innovation. These Centres build on the tradition of long-term collaboration among universities, research institutes and industrial partners. The Centres support multidisciplinary research, development and innovation, and also greater horizontal mobility for researchers, especially for early-stage researchers. We offer a brief overview of the Centres, and of the projects that they are working on:

Competence Center of Railway Vehicles
This consortium consists of four research institutions and nine large industrial companies. A unique feature of the Centre is that it brings together practically all the Czech universities that teach and carry out research on railway vehicles and most of the Czech industrial companies that produce

railway vehicles and components for them. The Centre is thus a unique platform for sharing information and developing this branch of industry in the Czech Republic.

Competence Centre for Advanced Technologies for Heat and Electricity Production

The Centre reacts to basic problems, e.g. the need to optimize the technology for refining biomass and for producing biofuels. It works on extending the use of co-generation units to provide local heat generation and to meet the demand for electricity, and also on optimizing the technology for renewable energy sources, for saving fossil fuels, and for improving the energy self-sufficiency of the Czech Republic.

V3C – Visual Computing Competence Center

The Center aims to produce interesting results and outputs in a very attractive field of science with a broad range of applications. It links two major fields of specialization – computer graphics and image processing – and in this way opens up new opportunities to develop efficient and demanding methods that can be applied in many fields. The Center also integrates research on user interfaces into its work.

Competence Center – Manufacturing Technology

The Centre aims to raise the level of technological excellence, competitiveness and production of the leading Czech manufacturers of machine tools, and of Czech machine tool production in general. The target of the Centre is to ensure that the Czech Republic, which currently occupies 13th place for total production of machine tools, makes its way into the top 10 by 2020.

Transport Systems Development Centre

The Centre brings together leading researchers and developers in the fields of intelligent transport systems, IT, economics, sociology and social geography, environmental engineering and safety engineering. In this way, it will raise the competitiveness of the Czech Republic in processes for introducing intelligent transport systems and mobility control, and it will improve the position of Czech researchers and Czech industry on a European level and on world markets.

Integrated Satellite and Terrestrial Navigation Technologies Centre

The technology for integrated satellite and terrestrial radio navigation did not begin to develop until quite recently, but it has been expanding and innovating dynamically. To deal with the requirements in this sector, it is necessary to be able to go from basic research, through all the steps in the process, to the production of instruments and equipment. This will make a major contribution to the process of innovating the industry.

Centre for Effective and Sustainable Transport Infrastructure

The Centre works on the road and rail infrastructure, including bridges and tunnels. It implements performance parameters to deal with environmental, safety and reliability aspects of structures and systems for effective management of the infrastructure. It responds to the requirements for a cost-effective transport

infrastructure that is sustainable in terms of materials and energy, and is technically durable, reliable and permanently available.

Centre for Applied Cybernetics 3
Cybernetics is an example of a field of science with high potential for applications that promises to make a major contribution to the growing competitiveness of the Czech Republic. The Centre has set itself the target of concentrating the leading research and application capacities of the public sector and the private sector, with the aim of collaborating with each other in the long term.

Radiation and Nuclear Safety Technologies Development Center: RANUS - TD
The Centre concentrates the potential of university researchers, specialized companies and industrial manufacturers to investigate fields related to nuclear power production, radiation safety, etc. It works on developing, producing and exporting unique, innovative materials and systems for detecting radiation, aimed at solving current problems with the safety of nuclear sources and their impacts on the natural environment.

Josef Božek Competence Centre for Automotive Industry
The main aims of the Centre are to develop new solutions in the field of vehicle construction, engines, and performance improvement, in order to achieve reduced consumption of fossil fuels, and to bring CO_2 emissions within the EURO 6+ emission standards, while also aiming at maximum safety and comfort.

Centre for Advanced Nuclear Technologies (CANUT)
The Centre works on studies of nuclear energy, e.g. on developing instruments and structures for experimental facilities for new generation nuclear reactors, on more reliable and safer nuclear instrumentation for current and new facilities, on innovative fuel cycles, and on all parts of the external fuel cycle, control systems, etc.

Centre of Excellence for Advanced Detection Systems of Ionizing Radiation
There are only a few workplaces in the world that carry out research and development on advanced systems for detecting ionizing radiation as an integrated system using state-of-the-art submicron electronics, and the Centre is the first of its type in the Czech Republic. This is a very rapidly developing field, especially in connection with the development of detection technologies in the large international research centres (CERN, Fermilab, SLAC, DESY, BNL, etc.)

Centre of Research and Experimental Development of Reliable Energy Production
The aim of this project is to raise the efficiency, extend the lifetime, and increase the operating reliability, safety and efficiency of the power production equipment of conventional and nuclear power plants. ■

SUN SCHOOL IN THE HIMALAYAS

Zanskari children have now been learning for five years in the Sun School that was built for the Himalayan village of Kargyak. The school is situated at an elevation of 4 200 metres, and it is energy self-sufficient for a considerable part of the year thanks to its solar panels. A photovoltaic system is used for lighting the classrooms and for charging the computers. Solar energy also assisted in the construction of this non-traditional building; two accumulators recharged the drill, and the current from the solar panels was used for the satellite telephone, the laptop, etc.

The school in the Himalayas grew out of the master's project of Jan Tilinger, Faculty of Civil Engineering, CTU in Prague (for further information about the school, see www.surya.cz). Jan Tilinger not only designed the school, but also constructed it. It is a passive structure that uses the sunny days to heat the interior: the glazed corridor is oriented to the south, so that the classrooms are heated during the daytime. ■

UNIQUE SCIENTIFIC WORKPLACES

Research is carried out at a large number of scientific workplaces. We have selected some of the most interesting laboratories, facilities and research groups.

FACULTY OF CIVIL ENGINEERING
Josef Underground Educational and Research Facility
Centre for the Integrated Design of Progressive Building Structures
Experimental Centre
Micromechanics Laboratory and the Nanolaboratory

FACULTY OF MECHANICAL ENGINEERING
Josef Božek Centre of Vehicles for Sustainable Mobility
Research Center of Manufacturing Technology
Aerospace Research Centre
Applied Cybernetics Research Centre
Centre for Quality and Product Reliability
Centre for Technological Information and Education
Progressive Technologies and Systems for Energetics
Centre for Welding Technologies
Innovation Centre for Diagnostics and Application of Materials

FACULTY OF ELECTRICAL ENGINEERING
Center for Applied Cybernetics
Center for Assistive Technologies
CeduPoint – Continuing Education Point
ATG – Agent Technology Center
Antennas, EMC and Simulation of Electromagnetic Fields
Laboratory of Photovoltaic Systems Diagnostics
CAT – Computer-Aided Measurement
Computer Graphics Center
Machine Intelligence Research and Application Centre for Learning Excellence – MIRACLE Centre of Excellence
Center of Excellence for Microsystems
Laboratory for Nanoelectronics and Semiconductor Electronics
High Voltage Laboratory
Gerstner Laboratory for Intelligent Decision Making and Management
Centre for Machine Perception
Transdisciplinary Research Laboratory in the field of Biomedical Engineering

FACULTY OF NUCLEAR SCIENCES AND PHYSICAL ENGINEERING
VR-1 Training Reactor
Golem Fusion Tokamak
Center for Relativistic Physics of Nuclear Collisions
Center for Particle Physics
Laser Plasma Center
Doppler Institute for Mathematical Physics and Applied Mathematics
Jindřich Nečas Center for Mathematical Modelling
Satellite Laser Ranging Station for ESA and NASA Satellites
Laboratory for Quantitative Methods of Research of Historic Monuments

FACULTY OF ARCHITECTURE
Department of Theory and History of Architecture
Department of Monument Care
Research Centre of Industrial Heritage
Department of Spatial Planning
Department of Town Planning

FACULTY OF TRANSPORTATION SCIENCES
Joint Systems Reliability Laboratory of the Faculty and the Institute of Informatics at the Academy of Sciences of the Czech Republic
Faculty of Transportation Sciences Experimental Laboratory
Certification Organ for Production at the Faculty of Transportation Sciences
Special Telecommunications Laboratory – a member of the Eurnex network
Telematics Laboratory
Experimental Mechanics Laboratory
Laboratory for Electronic Identification Systems and Communications (e-ident)

FACULTY OF BIOMEDICAL ENGINEERING
Artificial Lung Ventilation Laboratory
Excimer Laser Laboratory
Joint Workplace of the Faculty of Biomedical Engineering and the First Faculty of Medicine of Charles University
Simulated Workshop for Intensive Care and Medical Instrumentation

FACULTY OF INFORMATION TECHNOLOGY
Software Engineering Group
Digital Design and Dependability Group
Applied Numerics and Crystallography Group,
Parallel Computing Group

INSTITUTE OF TECHNICAL AND EXPERIMENTAL PHYSICS
Van de Graaff Laboratory
Radiation Imaging Laboratory
Detection Laboratory

KLOKNER INSTITUTE
Centre for Composite Materials and Structures ■

PROMOTING SCIENCE AND RESEARCH

Since interest in studying engineering has dropped in recent years, CTU has been trying to promote itself by making attractive presentations of science and research. We have been making active efforts to influence secondary school students and primary schoolchildren. Since 2012, CTU has been working on a European project aimed at popularizing science and research on an ongoing basis. We organize events for science and technology circles, interactive field trips, competitions, summer science and technology camps, etc. For secondary school students, we organize individual specialized internships at the CTU faculties within the Junior Tech University project. Each year, we participate in the Day of Science at the Prague universities, where we present science from close up, in a non-traditional and interesting manner.

4 International Relations

LINKS WITH LEADING UNIVERSITIES ALL OVER THE WORLD

Which prestigious universities have recently shown interest in collaborating with CTU? What kinds of collaboration are universities abroad most interested in?
CTU is particularly interested in signing new agreements with universities in the top 500 of the internationally recognized QS World University Rankings.
We currently have bilateral agreements with 83 foreign institutions in this grouping of prestigious universities. In the last two years, we have established contacts and then signed bilateral agreements with the Israel Institute of Technology in Haifa, with Stellenbosch University in South Africa, with the University of South Australia in Adelaide, with Kyungpook National University in Daegu, South Korea, and with Sungkyunkwan University, also in South Korea. We are negotiating with Universidad de Los Andes in Bogota, Columbia, and with the Queensland University of Technology in Australia. All these universities are ranked among the 500 best in the world.

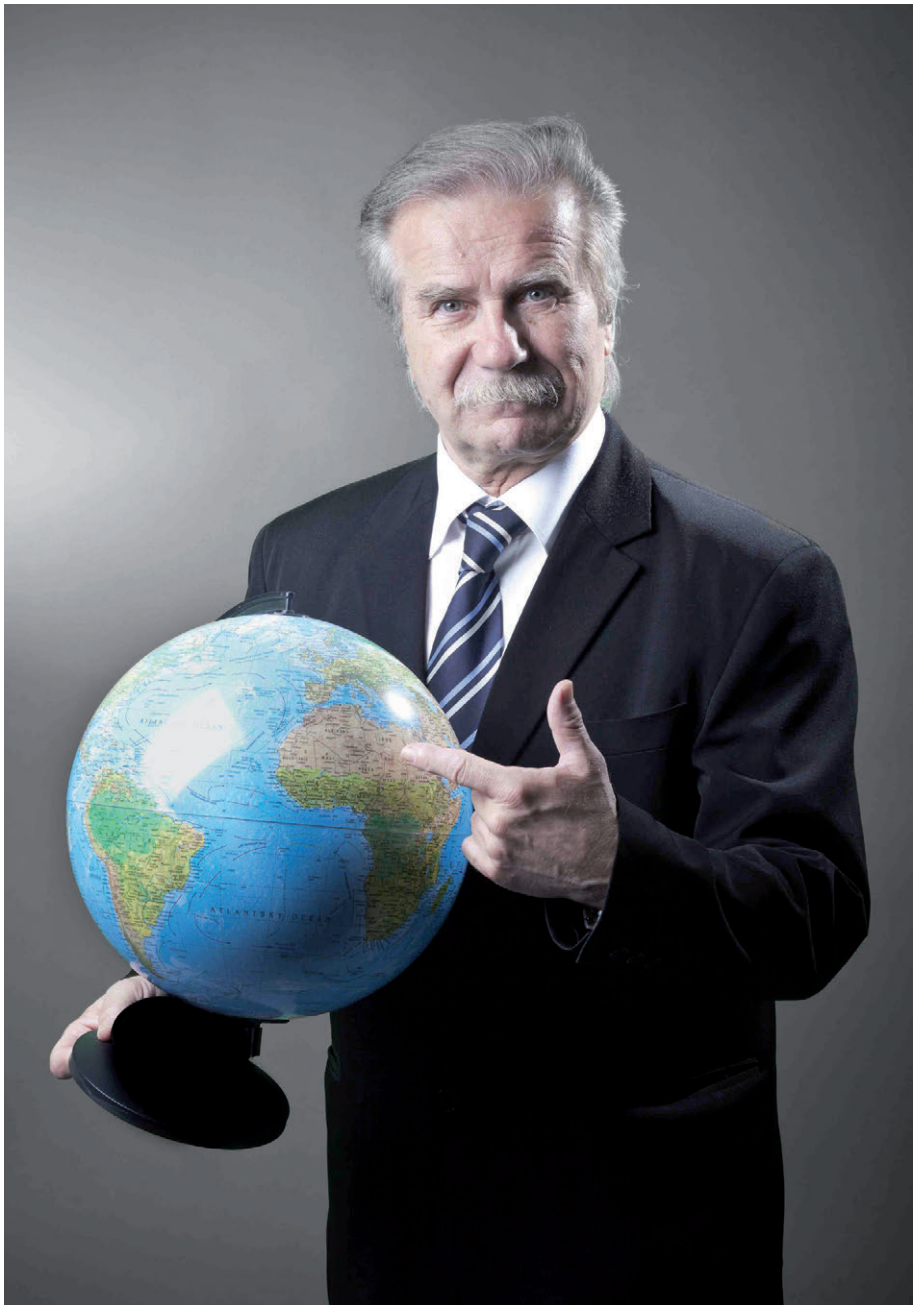
Where do CTU students go to most in the framework of bilateral agreements?
Our bilateral agreements are above all with universities from non-European countries in north, central and south America, in Asia and Australia, and with Russia. The largest numbers of students – about 50 per year over the last three years, go to our six partner universities in the USA. Considerable numbers also go to Taiwan, South Korea and Russia. Every year, students go to other attractive and exotic destinations, such as Argentina, Brazil, Costa Rica, Mexico, Peru, China, Japan, Indonesia, Canada and Australia. These are exchange programmes, and we offer students from these countries a good welcome and a good study experience in Prague, too.

And how about the Erasmus programme?
In the framework of the Erasmus programme, about a half of the students that we send go to four countries – France, Germany, the United Kingdom and Spain, and the biggest numbers of incoming students also come from these countries. In the 2010/2011 academic year we sent 256 students abroad on the Erasmus programme and 271 in 2012/2013. Internships within the Leonardo programme and also within the Erasmus programme have been developing well.

Has it been possible to get professors from abroad to come and teach at CTU?
In the last three years, visiting professorships at CTU have been supported by a university development project. This project has funded visits by a number of teaching fellows at a number of CTU workplaces. In 2012, the Faculty of Architecture and the Faculty of Information Technology made fullest use of this opportunity.

Do Czech students take care of international students in any way?
The International Student Club plays a major role in welcoming and looking after international students. This Club works very closely with the department of external relations and with the international offices at the faculties, and also organizes a wide range of high-quality events and activities on its own initiative. One well-staffed and well-equipped International Student Center helps foreign students with day-to-day problems. ■

Prof. Ing. Jiří Bíla, DrSc.
Vice-Rector for External Relations
Deputy Head, Institute of Instrumentation and Control Engineering,
Faculty of Mechanical Engineering



CTU HAS STUDENT EXCHANGES INTEGRATED INTO ITS STUDY PROGRAMMES

CTU has been signing and activating new collaboration agreements mainly with highly-rated universities, and has been maintaining older agreements with valued and established partners. Under various agreements, 703 students of partner universities came to study for a semester or a year in Prague in the 2012/2013 academic year, and a slightly lower number of CTU students studied at a partner university abroad. Most student mobility agreements are open to all CTU students (including non-EU citizens) who are approved by their faculty and who have adequate relevant language skills. The exchanges are supported by funding from the Ministry of Education, faculty and EU sources. While they are studying aboad, participants are required to earn credits towards completing their study programme at their home university. CTU facilitates credit transfer for incoming and outgoing exchange students.

CTU's collaboration with top universities:

Universities in the Top 100 in the QS Rankings

Freie Uni Berlin, bilateral agreement signed since 2011/2012, Fac. Nucl. Eng.
EPFL Lausanne, from 2011/2012, university agreement
Trinity College Dublin, Fac. Biomed. Eng.
Uni Amsterdam, Fac. Biomed. Eng.
Uni Utrecht, agreement from 2013/2014 , Fac. Inf. Tech.
Kings College, London, from 2013/2014, Fac. Nucl. Eng.
University College London, from 2013/2014, Fac. Arch.

We have been collaborating with the following leading universities for a longer period of time: KU Leuven, TU München, Uni Lund, Uni Uppsala, Aalto Uni, Helsinki, Uni Glasgow.

Universities rated between 100th and 200th in the QS Rankings

Vrije Uni, from 2011/2012, Fac. Elec. Eng.
Uni Gent, from 2012/2013, Fac. Elec. Eng.
Uni Oslo, from 2013/2014, Fac. Nucl. Eng.
Uni York, from 2013/2014, Fac. Elec. Eng.
We have been collaborating with the following prestigious universities for a longer period of time: UCL Louvain, RWTH Aachen, KIT, DTU Lyngby, TU Delft, KTH Stockholm.

Destinations for student exchanges

In the framework of Erasmus agreements and bilateral agreements, exchanges of students take place mainly with universities in the European Union member countries, in north, central and south America, in Asia and Australia. Russia is also an important partner.
Smaller numbers of exchange students go to other attractive and exotic destinations, such as Argentina, Brazil, Costa Rica, Mexico, Peru, China, Japan, Indonesia, Canada and Australia.

Student exchanges outside Europe			
	2010	**2011**	**2012**
Argentina	2	3	5
Australia	3	1	2
Brazil	4	2	2
Costa Rica	3	4	8
China	6	6	8
Indonesia	13	7	6
Japan	7	5	4
South Korea	17	13	15
Canada	7	9	7
Mexico	11	9	6
Peru	3	2	2
Russia	23	22	19
Singapore	9	6	14
Taiwan	18	20	25
USA	51	50	49
	177	**159**	**172**

Student mobilities in the framework of the European Erasmus programme are also very popular. In the 2010/2011 academic year, 256 CTU students participated in these study stays. 304 students participated in 2011/2012, and 271 students in 2012/2013. Internships within the Leonardo programme and the Erasmus programme are also developing well.

Leonardo and Erasmus internships							
Country	**Leonardo**			**Erasmus**			**Total / country**
	2010	**2011**	**2012**	**2010/11**	**2011/12**	**2012/13**	
Belgium	1			1		1	3
Denmark	1	2	1		2		6
Finland			1	1	1	1	4
France	3	1	2	2	5	6	19
Ireland	1		1			1	3
Iceland					1		1
Italy		1	3	1	3		8
Germany	9	6	7	9	4	5	40
Netherlands	6	1	4	1	5	4	21
Norway		1	1			2	4
Portugal					3		3
Austria	2	1	2	1	2	2	10
Greece			1				1
Slovakia				1		2	3
Slovenia			3	1		1	5
Spain	4		2	2	1	1	10
Sweden	2	1	1	2		2	8
Switzerland			1	1	1		3
Turkey					1		1
United Kingdom	4	1	2	3		4	14
Total	**33**	**15**	**32**	**26**	**29**	**32**	**167**

Double degrees

A CTU student can obtain a double degree or a joint degree by taking one of the joint study programmes with foreign universities. CTU currently offers 11 joint and double degree programmes, the largest number being at the Faculty of Civil Engineering, where students can apply for five joint degree programmes. Two joint degree programmes are offered by the Faculty of Electrical Engineering and by the Faculty of Transportation Sciences, while the Faculty of Mechanical Engineering and the Faculty of Biomedical Engineering offer one programme each. The partner universities include: University of Padova, Technical University of Catalonia, École Nationale des Ponts et Chaussées, École Centrale de Nantes, RWTH Aachen, TU München, Trinity College Dublin, University of Coimbra, Tomsk Polytechnic University, University of Linköping, and the University of Texas at El Paso.

Self-funding foreign students

CTU has been taking measures aimed at internationalizing the University and at increasing the numbers of self-funding students. One of these steps has been to take part in major international higher education fairs in countries which have the potential to provide applicants for engineering study programmes. CTU participates in these higher education fairs in order to come into personal contact with potential students, and also with a view to raising the international profile of CTU as one of the prestigious top universities that present themselves at higher education fairs. One of the aims is to make personal contacts with local universities and to collaborate with Czech organisations and bodies that will promote the University in those countries. In the last year, CTU has participated in higher education fairs organized in India, Singapore, Peking, Seoul, Hongkong and Kazakhstan.

In addition to participating in fairs, the University's representatives have made trips aimed at setting up collaboration with representative of countries that offer state scholarships and are interested in sending their students to the Czech Republic. In 2013, visits have been made to the Dominican Republic and to Columbia.

According to information published in May 2013, 140 self-funding students were studying at CTU, and 86 self-funding students have graduated from the University since 2006. The number of self-funding students is rising year-by-year, and has increased 250% in the last four years. This is a much higher rate of increase than any other Czech university has achieved. CTU is the only technical university in the Czech Republic that is developing a strategy for attracting self-funding students. This strategy has been based on an extensive analysis. In April 2012, CTU launched its website www.studyatctu.com, where applicants can find full and detailed information.

People interested in studying at CTU in Prague receive our full attention right from the start. Information about studying at CTU is provided, together with advice about problems that can arise when studying abroad. Current information is provided about opportunities to study in English language, the selection process, obtaining a visa, nostrification of previous studies, accommodation in student dormitories and in private flats, living costs, and also

about cultural life in Prague and opportunities to travel. You can address your questions to our Student Advisor by e-mail, by Skype or on Facebook, practically non-stop.
On social networks, which have been growing in importance in recent years, CTU is represented by its own Study at CTU facebook profile for foreign students. The information is updated daily. The Facebook profile provides information about what is going on at the University, congresses and workshops in English language, job offers, technical innovations and stories about successful students and graduates of CTU.
Each year, we carry out a survey of the problems encountered by self-funding students. The questionnaire and the analysis of the responses help us to improve our services and raise the level of satisfaction of self-funding students.
Of the self-funding students responding to the questionnaire, 80% nowadays state that CTU is their first choice for university studies, which indicates that our strategies and our work are producing good results.

Membership of CTU in international institutions

CTU is already a well-established long-term member of a number of prestigious international associations and networks, and joins new associations only when they fit into the University's strategy. In addition to many specialized associations that the faculties belong to, the University is a member of:

- The International Association of Universities (IAU)
- The European University Association (EAU)
- The European Association for International Education (EAIE)
- The European Society for Engineering Education (SEFI)
- The Association of European University Public Relations and Information Officers (EUPRIO)
- Top Industrial Managers Europe (T.I.M.E.)
- The Conference of European Schools for Advanced Engineering, Education and Research (CESAER)
- Die Internationale Gesellschaft für Ingenieurpädagogik (IGIP)

Care for students from abroad is provided not only by the International Office at the university rectorate and by the International Departments at each faculty, but in great measure by the university's outstanding International Student Club (ISC). The cornerstone of ISC's care for international students is its so-called Buddy Programme, in which Czech students offer wide-ranging assistance to foreign students, helping them to deal with everyday problems in the new and unfamiliar environment. At the beginning of each semester, ISC organises an Orientation Week, which is aimed at preparing newly-arrived students for the upcoming semester. It includes taking them to their accommodation, helping them to sign in and settle in; helping them to obtain a public transport pass, and helping them to register at their faculty, etc. Integration Day is a pleasant tradition in Orientation Week, with an informal party to meet and get to know other students. At the end of Orientation Week and in the course of the semester, ISC organises numerous highly-recommended inexpensive day trips and two- or three-day trips to get to know the Czech Republic and also neighbouring countries. ISC also organises a wide range of sports events and physical activities, as well as cultural events, including National Presentations. ISC organizes prize-winning language teaching and language exchange courses, in which students teach their own language to other students. The final major ISC event each year is traditionally a boat trip on the Vltava. ■

5

CTU Development

FOR GREATER COMPETITIVENESS

Where do you see the added value that CTU, a university which can boast a proud history and which also has excellent present-day facilities, can give to the ordinary offer of engineering study programmes?
The study programmes at CTU include not only a deep theoretical basis from mathematics, physics, mechanics, electrical engineering, informatics and other basic fields of study, but also, through specialized courses, they develop students' creativity through specific projects. Our graduates are therefore well prepared to enter into innovative processes in industry, transportation, power engineering and other practical applications.

Is there a synergy at CTU between classical fields of study and modern innovations among the specialists in the faculties?
The CTU management team encourages greater collaboration among the faculties and institutes, especially in sharing the latest technologies and in providing expert support for our industrial partner organizations, for state bodies and for the public authorities. The newly-established joint scientific workplaces in the framework of the Centre for Energy-Efficient Buildings, the Czech Institute of Informatics, Robotics and Cybernetics, and other CTU workplaces, provide good examples of this.

What are the aims for the innovative potential of the university in the short term?
In the new programme period for support from European funds, we want to give considerable support to preparing highly-educated engineers and technicians, in order to raise the competitiveness of the Czech economy on a European and world scale. For this, we make use of the fact that our faculties are linked with European excellence networks in a number of fields, and the fact that we are able to offer and implement collaboration with leading universities in Europe and in the world.

Through its expert activities, CTU is a reliable and recognized partner for institutions in the public administration. Is this trend going to continue into the future?
In the Czech Republic, like in developed countries all over the world, university workplaces are sought-after partners for independent expert opinions and analyses, and for qualified decision-making on innovative processes. Together with trends towards growing needs for expert competence in decision-making, there is a growth in demand for collaboration on an expert level with CTU.

Not only successful commercial companies but also education institutions must pay heed to effective management. How does CTU do in terms of process management?
The CTU management team and the management teams at the faculties are looking for ways to make the processes more effective, in teaching and in scientific and research work. They are therefore gradually setting up better support for these processes, not only through organizational changes, but above all by improving the components of the information system, and the information system as a whole. For this, they make use of support from Ministry of Education development projects, and they also learn from the experience of leading universities in other countries. ■

Prof. Ing. Petr Moos, CSc.

Vice-Rector for Development

Chairman of the PhD Specialist Board, Faculty of Transportation Sciences

Chairman of Control Commission for CTU Information System

CTU DEVELOPMENT

We aspire to be a significant, sought-after research university in the European higher education area, with a demanding but friendly approach to students.

Our strategy until 2015
The University's research strategy has identified three priority areas for the development of tertiary education in the Czech Republic:

1. Quality and relevance
Quality and relevance will be effective above all in the sphere of education, science, research and other creative activities, and also in the sphere of structure, integrity and personnel policy.
We will focus on enhancing the quality of all study programmes, at bachelor, master and doctoral level, in view of the increasing demand for technical personnel.
We will create a dynamic system aimed at restructuring and modifying existing study programmes and introducing new programmes. The accent will on higher quality studies and on enabling easy horizontal permeability of fields of study.
We are committed to applying state-of-the-art interactive and educational technologies, such as e-learning and e-teaching.
The establishment of more Centers of Excellence will help to raise the level, in particular, of master and doctoral study programmes.

2. Sincerity in public relations and international cooperation
We will provide substantial support for student mobility, which will enable a large number of our students to spend at least one semester at a foreign partner university or at another technical institution abroad in the course of their studies.
Our faculties and other incorporated establishments collaborate with major foreign universities to set up double-degree study programmes and joint-degree study programmes. These programmes are a necessary condition for positioning CTU as a significant university in the European higher education area, and are a pathway for involving CTU graduates in the European employment market.
We of course also consider cooperation with industry in the Czech Republic and abroad to be a significant priority.
Concerning internationalization of study, we are striving to increase the proportion of foreign students studying at CTU to 12–14% by 2015. International cooperation,

participation in international projects and foreign experience gained by study stays at foreign universities or technical establishments lasting at least 1 semester are becoming an integral aspect of raising the quality and qualifications of doctoral students and members of our academic staff.

3. Efficiency and financing

We will focus on developing university information systems, an up-to-date economic model of university management, and the university's investment activities.
We will continue to develop our technical, material and information infrastructure aimed at effective university management in all spheres of its competence.
The management of the university buildings and the organisational structure of the university will be facilitated by introducing the concept of Facility Management, aimed at effective execution of management functions by applying advanced tools for controlling and supervising all processes.
We are preparing systemic measures to ensure economical and effective use of financial resources. One of these measures is the introduction of a process model of university management and the Full Cost accountancy model. The aim of these measures and mechanisms is to achieve a twofold to threefold increase in secondary financial resources by 2015.
As far as infrastructure is concerned, we will focus on optimizing space utilization, and on refurbishing existing lecture rooms and theatres to a level that meets the demands of present-day university education.
We will continue to support all research centres established in recent years. ■

OUR STRATEGY IN

Science

We want to be a worthy partner for leading workplaces in Europe and in the rest of the world, while at the same time continuing to deepen our collaboration with suitable research organisations and institutes in the Czech Republic, especially with the Academy of Sciences of the Czech Republic.

Finance

The development of the University and its infrastructure receives support especially in the framework of the development programmes of the Czech Ministry of Education, Youth and Sport, the Fund for the Development of Universities, and from CTU's own sources.

There has also been a significant growth in the funding that we receive from the EU structural funds, especially from the Prague – Adaptability Operational Programme, from the Prague – Competitiveness Operational Programme, and from the Education for Competitiveness Operational Programme.

In the period 2007–2013, CTU in Prague workplaces will have received a total of about CZK1.2 billion from these Operational Funds.

Development and innovation

We want to occupy a leading position in collaboration with industry and with the public administration, and to create conditions that will provide growing potential for innovation, artistic and other creative activities, technology and knowledge transfer, for the benefit of society.

EXAMPLES OF DEVELOPMENT ACTIVITIES

Faculty of Transportation Sciences: the Transport Hall

In the framework of its development plan, the Faculty of Transportation Sciences acquired and refurbished new spaces in the Horská A building, and has modernized its IT network and audiovisual equipment. This has enabled some faculty institutes to relocate to better facilities, and has created new spaces for the faculty laboratories. The Transport Hall in the Horská B building was recently opened. This hall will provide major support for the teaching and research work carried out at the Faculty in the field of rail transport. Two lecture theatres have also been refurbished in the building in Konviktská Street.

Faculty of Biomedical Engineering: new laboratories

The Faculty of Biomedical Engineering has made major investments in science and research development projects: in 2011, investments were made in a new XUV radiation laboratory, and in 2012, in a laboratory for preparing biological specimens. The biggest and most expensive project in 2012 involved finishing the construction work for the Infrastructure for Biomedical Engineering (BIOKOS), which is to open, fully equipped, in October 2013. The complex will consist of 9 state-of-the-art biomedical laboratories with a range of research capacities. These laboratories will dramatically improve the scientific and research capacity of this Faculty, and will contribute to higher-quality education for the faculty's students.

Faculty of Information Technology: ICT infrastructure

With help from the Development Funds for Universities projects, it has been possible to renew and update the computer laboratory equipment and the Faculty's overall ICT infrastructure. The Faculty of Information Technology is preparing a new, sophisticated process and data oriented information system, the first components of which are already in operation. ■

9

Construction and Investment

UNIVERSITY FACILITIES IN NEW AND HISTORIC BUILDINGS

The university is located in a complex of buildings in the Prague – Dejvice district, and also in a considerable number of historic buildings in the city centre. How would you describe the facilities for study and for scientific research?
The rapid development of science and technology must have an impact on the teaching and research process at all technically-oriented universities. It is completely natural for our university to give priority to modernizing, refurbishing, reconstructing and extending the buildings and the spaces on its campuses in its development strategy and in its long-term plan. If we want to keep systematically maintaining and developing our study and research facilities, it is necessary to begin by systematically forming a realistic financial basis. Until now, we have been able to do this successfully.

Three years ago, a modern building was constructed with facilities for future architects and for specialists in informatics. Are you preparing for some other building, or for some major reconstruction that will provide attractive conditions for students?
Yes, our biggest investment was in the CTU New Building, which houses four big lecture theatres and also some modern, specialized spaces for teaching the next generation of architects and informatics specialists. There are spaces for architecture studios, seminar rooms, computer laboratories, and also facilities in the form of specialized workshops for architects and designers.
There are also many examples of successful modernizations and reconstructions. In particular, some large lecture halls have been reconstructed and have been equipped with modern audiovisual technology. This has been done on the Dejvice campus, and also on the Charles Square campus in the city centre. In addition to the work that has been done inside the Prague metropolitan area, the university has also been developing some sites outside the city boundaries. Some major scientific and research facilities and workplaces will be brought into operation in 2013. There are some modern laboratories for the Faculty of Biomedical Engineering in Kladno, and a new complex with scientific and research workplaces and laboratories at the University Centre for Energy-Efficient Buildings in Buštěhrad.

As a technical university, CTU educates civil engineers, architects, and other types of specialists. How are you able, through construction and investment activities, to keep pace with the latest trends – so that students don't just learn about these trends, but also encounter them in the university's real estate?
One example of this is the systematic organisation and implementation of measures to achieve a major reduction in the energy required to operate our buildings. This trend was set in motion by changing the coating of the facades and then replacing the internal technical infrastructure in the building used jointly by the Faculties of Mechanical Engineering and Electrical Engineering. The replacement of the facade coatings is planned to be completed in 2014. In 2012 we started work on replacing the facade coatings on the Civil Engineering building. ■

Prof. Ing. Miloslav Pavlík, CSc.
Vice-Rector for Construction and Investment
Head, Department of Construction Engineering I, Faculty of Architecture

Glazed spaces in the historic area on Charles Square, in the centre of Prague.

MODERNIZATION ALSO FOR BARRIER-FREE ACCESS

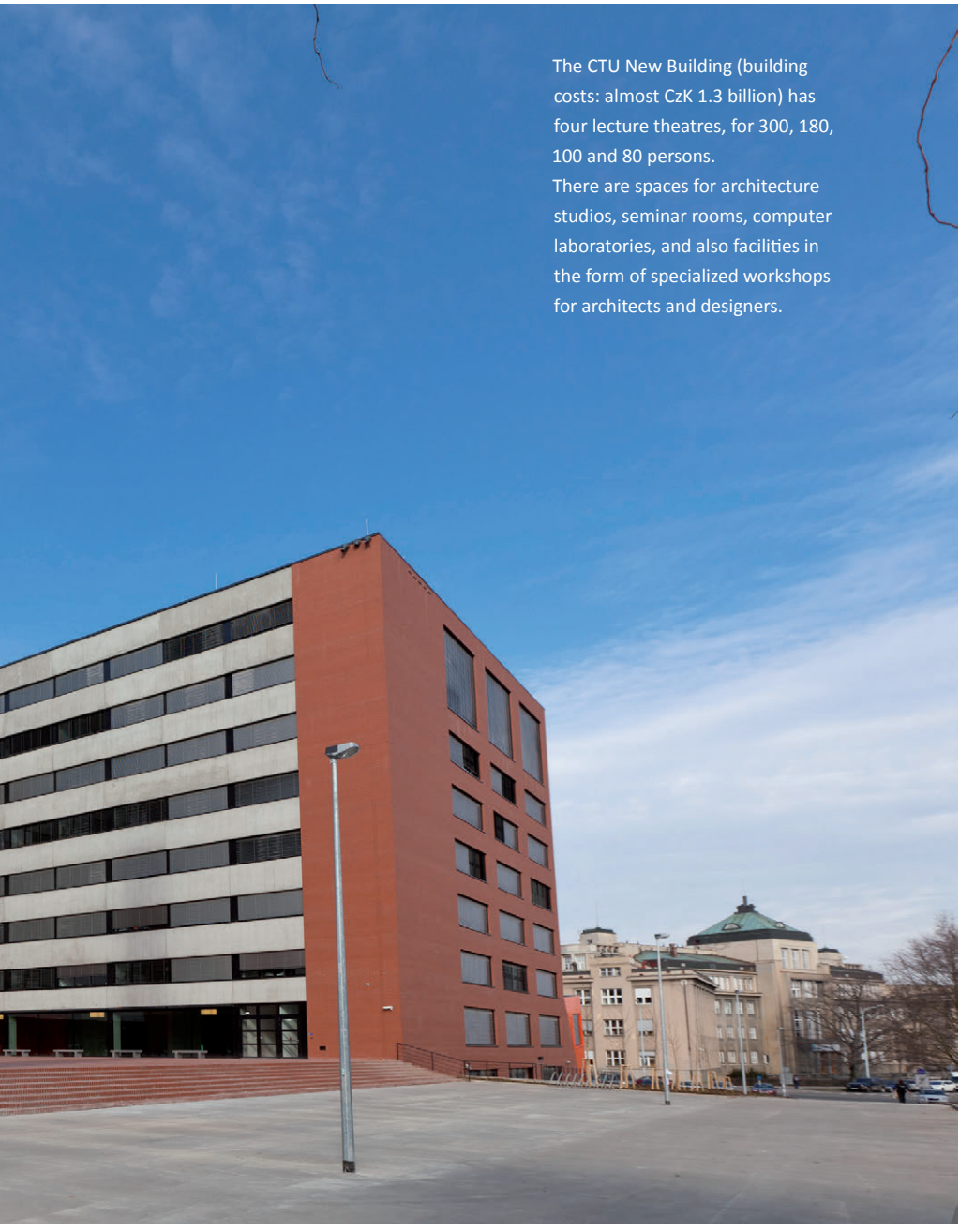
Classes at CTU in Prague are held not only in newly-built modern structures but also in some historic buildings. The majority of the university's buildings and spaces come from the first half of the 20th century, while the oldest building dates back to the 17th century! In its investment and construction planning, the university therefore makes great efforts to reconstruct and modernize the spaces and make them suitable for present-day requirements. One aim is to make them accessible for people with disabilities.

The CTU strategy consists of a strategic plan to invest in the present university infrastructure and in new buildings. For this purpose, five main targets have been set for the 2011-2015 period. The first is to optimize the use of the present spaces and buildings and maximize their usability as spaces for science, research and development. The second aim is to bring the present classrooms and lecture theatres up to a level that meets the requirements of modern university education. The lecture theatres and laboratories, and also their technical equipment, are being modernized. The third aim is to increase the energy efficiency of the buildings on the basis of the results of energy audits and the recommendations of a study under the title Overall Optimization of the Energy Management of CTU Buildings. The fourth aim set in the strategic plan is to provide the necessary infrastructure for research and development activities, making use of funding in the framework of the priority areas of the EU Operational Programmes. The fifth aim is to prepare and implement the construction of spaces for teaching, research, development, accommodation and social activities on the Public Private Partnership (PPP) basis of funding.
CTU draws on a range of sources of funding. The basic source is funding from the Ministry of Education, Youth and Sport, which is used for investing in the basic material and technical requirements of the public universities. This is supplemented by the university's own sources. In the framework of state funding, including required co-funding, a total of almost three billion crowns have been spent or will be spent in the period from 2006 to 2014. There is now a new opportunity to draw on the Operational Programmes of the European funds, which prioritize the area of science

Revitalization of the attic spaces in the main building of the Faculty of Nuclear Science and Physical Engineering, in a neo-classical building from the beginning of the 20th century, where a modern barrier-free space for doctoral students has been created.

and research for innovation. By contrast with experience from abroad, in Czech conditions the option of obtaining necessary funding through collaboration with the private sector remains an open question. “I have to admit that it has not been possible to fulfill the idea stated in our original investment plan that we would involve private sources of funding in implementing some of the PPP projects that had been prepared. In spite of considerable efforts, we have not been able, for example, to start preparations for constructing the Dejvice Center at Vítězné náměstí (Victory Square). In the academic part of this development, there will be some more teaching and laboratory spaces for CTU. I am also not satisfied with the limited approach to investment sources for student accommodation,” vice-rector Miloslav Pavlík adds.

The interior
of the New Building



The CTU New Building (building costs: almost CzK 1.3 billion) has four lecture theatres, for 300, 180, 100 and 80 persons.
There are spaces for architecture studios, seminar rooms, computer laboratories, and also facilities in the form of specialized workshops for architects and designers.


ATELIER D
ATELIER D

The Faculty of Civil Engineering buildings now have new facade coverings and state-of-the-art technical equipment (the lifts are controlled by a new generation of microelectronics).
The reconstructed lecture theatre bears the signature of the architect, Vladimír Gleich.

The original proposal in the General Investment Development Plan was to draw on 2.5 billion crowns from state funding distributed by the Ministry of Education, Youth and Sport by 2017. However, it can now be stated that there is a real prospect of exceeding this amount through investments implemented before the end of the second period in office of the present CTU management team – that is to say, by 2014. In recent years, CzK 430 million have been spent on reconstructing and modernizing lecture theatres, a further CzK 480 million have been invested in reconstructing and modernizing classrooms and laboratories, and CzK 320 million have been spent on reconstructing facades and roofs. This has considerably raised the quality and the usability of these buildings, and has reduced the running costs. The university management is currently considering the great potential and opportunities for taking advantage of the calls prepared in the European Operational Programme that have been modified in favour of the technical and scientific universities in Prague. Preparations for the long-term revitalizion project for the building in Jugoslávských Partyzánů Street on the Dejvice campus are now being finalized. When the revitalization is completed in 2015, the building complex will be used by the Czech Institute of Informatics, Robotics and Cybernetics (CIIRC). The revitalized spaces of the original buiding will also house classrooms and laboratories for young scientists and for master's and PhD students in these fields of study, and also for certain research teams from the Faculty of Mechanical Engineering and the Faculty of Civil Engineering.

The reconstructed lecture theatre in the Faculty of Mechanical Engineering

Investment of a further CzK 320 million is being prepared for 2014, including CzK 65 million for reconstructing lecture theatres and CzK 255 million for replacing the coatings of facades.

A further high-priority task is to construct a building for the Institute of Theoretical and Experimental Physics. The temporary building in which it is now based needs to be moved out of and demolished to provide the building site for a Charles University Centre of Excellence. For this investment project, our university will want to make use of the European funds that have newly been made accessible to universities located in Prague. ■

7 Finance

THE ANNUAL CTU BUDGET IS ALMOST FOUR BILLION CROWNS

As the registrar of the university, you are responsible for the economic and financial management. Is it a problem to finance the university?
I would not say that there is an overall problem in financing the university, as CTU turns in a positive balance sheet each year. This points to the fact that, even in times of ongoing recession in the European and Czech economies, and the related fiscal problems, we have been showing economic stability and we are in a healthy financial situation. Nevertheless it is true that, if there were to be a long-term decrease in state contributions, it could become difficult to finance certain specific activities, especially those which are not directly a part of the teaching process or the science and research process, but are desirable for the development of the university and for a positive perception of the university in society and in the academic community. This mainly concerns ancillary and supplementary services for students and academic staff, and some PR activities.

Income from the private sector accounts for only ten percent of the university budget. Shouldn't that be a higher figure?
If we add to the income from the private sector the income that we get from the dormitories and canteens, the proportion is somewhat higher, about 17%. All the same, I must agree that this proportion has to increase in future. I see the problem in the present structure of the Czech industrial sphere, which contains comparatively few major hi-tech companies. In addition, a considerable number of Czech companies are branches of supranational corporations, which often have their research capacities located in their home countries. Technologically mature companies with Czech owners are not yet well enough capitalized to be able to fund their own research and development fully, not even via outsourcing from the universities.

What steps is the university management taking in an attempt to make fuller use of the potential of its scientific capacity, and to get money to improve the university's facilities?
The pressure for university cost-effectiveness scarcely allows us to take on projects that do not also bring in some money, or that do not at least pay for themselves. As for the first part of your question, one of these steps is our long-term support for the CTU Innovation Centre, which has as its main mission to support technology transfer from the university environment out into the production sphere.

For many students and scientists, quality and excellence are important criteria. How does the accent on quality and excellence make itself felt in the university budget?
The basic philosophy of the whole university budget is that funding goes where the good things were performed that generated the funding. High-quality creative workers thus harvest almost all of the fruits of their work, and this is a strong motivating impulse for them. The university also supports quality directly. The budget sets aside reserves which are allocated directly to support for high quality. Another example is that the university is prepared to co-fund, with tens of millions of crowns, for example the Czech Institute of Informatics, Robotics and Cybernetics project to set up a European Centre of Excellence. ■

Mgr. Jan Gazda, PhD
Registrar of CTU
Member of Rector's Board

ABOUT THE CTU BUDGET

The Czech Technical University in Prague is run in accordance with a budget that is approved by the CTU Academic Senate. A substantial part of the budget of CTU, as a public university, comes from funds provided by the state via the Ministry of Education, Youth and Sports for educating students, for specific research projects, and for student accommodation and catering. Significant funding also comes from the grant agencies and from income from supplementary activities.

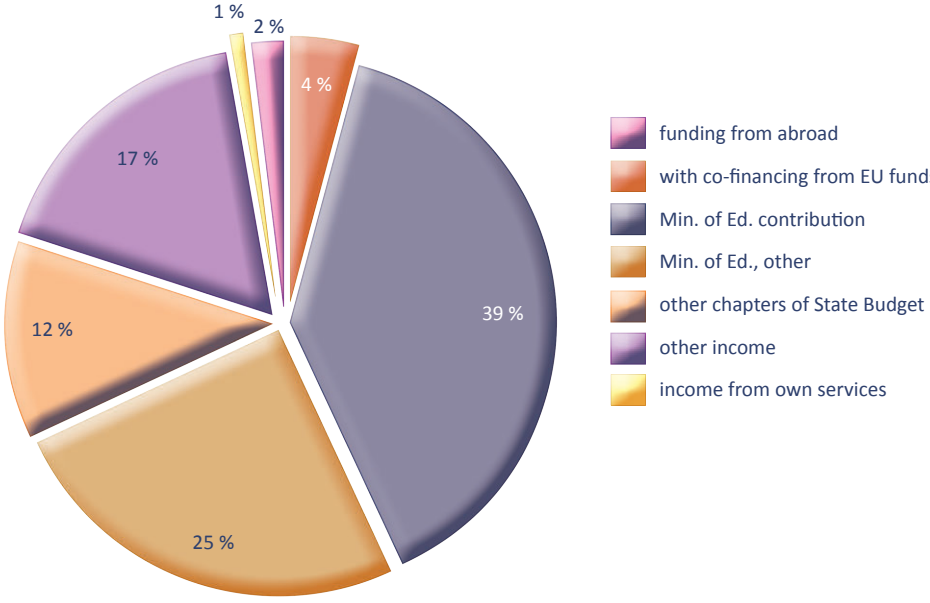
The overall CTU budget has been growing steadily in recent years, at a rate of about 3%, which is more rapidly than at other comparable universities. At the same time, the University has managed to raise its revenues from institutional grants and contributions. This is an outcome of the tendency of the Ministry of Education, which is the main source of CTU funding (see the attached pie chart), in recent years, to place greater emphasis on the qualitative performance indicators for each university when allocating ministry funding. Since CTU occupies a leading position in terms of all quality indicators for education and for research among the public universities in the Czech Republic, this shift in the Ministry's philosphy has had a positive impact on the university's finances.

At the present time, quality indicators as a proportion of the ministry's contribution for education stand at 22,5%, and this can be expected to rise further in the next year.

In 2012 (apart from income from teaching), CTU was able to earn almost two billion crowns from its supplementary activities. This includes over 500 million crowns of receipts from its own services, and almost a quarter of a billion crowns from knowledge transfer – income from licensing agreements, from research contracts, for paid education courses for workers in specialized fields, for consultations and counselling.

CTU achieved favourable financial results in 2012. The University ran a surplus, which shows that despite the long-term problems of the Czech and European economy, and the accompanying fiscal shortfalls and cuts in funding, CTU in Prague has shown economic stability and a healthy financial position. In 2012, CTU raised its reserves by more than 120 million crowns. This money will be used in future as a source for co-funding and sustaining operational programmes and scientific projects.

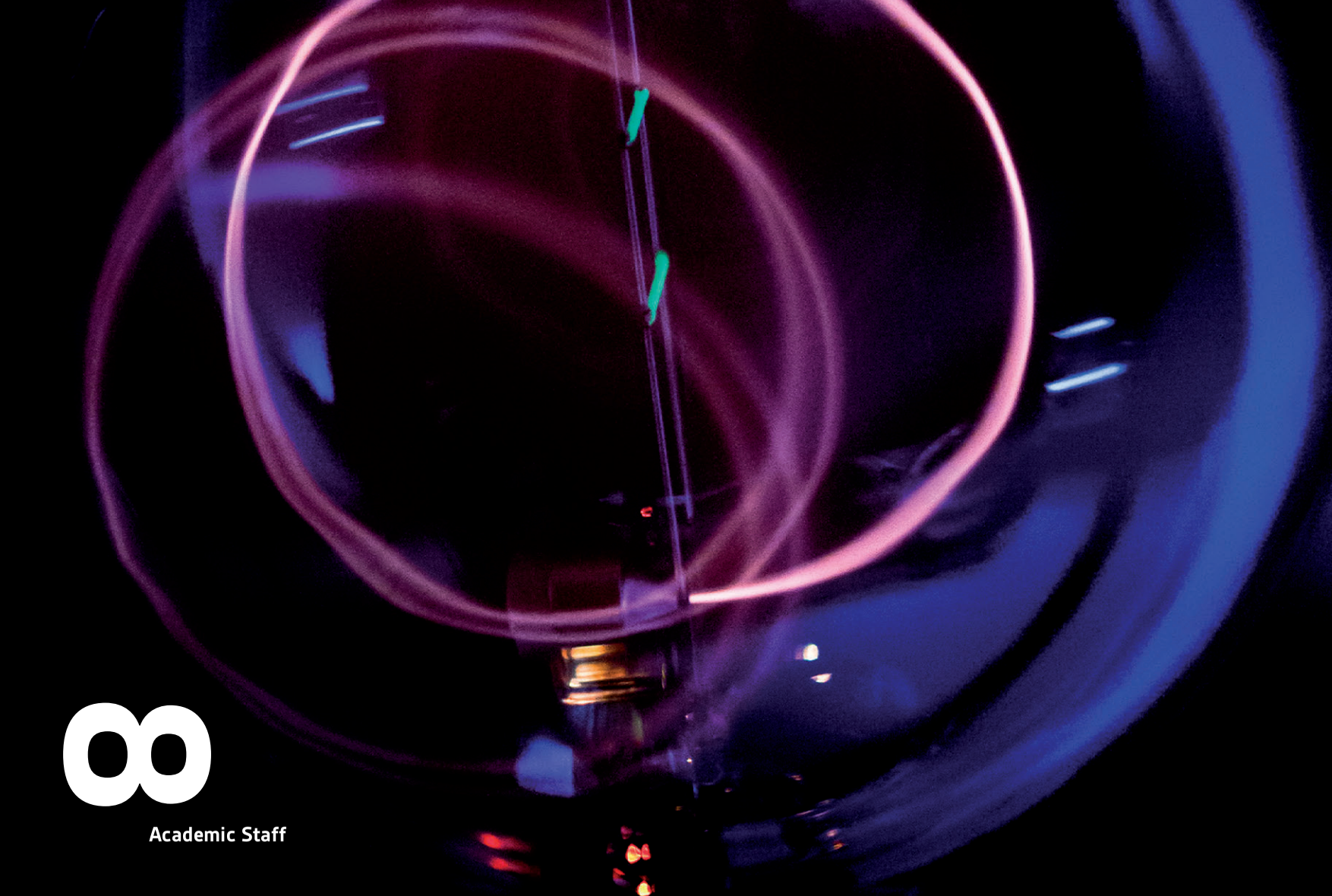
CTU has also been making efforts to strengthen and improve its economic and financial management. This process has been taking place in broad discussions at all levels in the University, from the Academic Senate of the University, via meetings between the rector and the deans, and between the university registrar and the faculty bursars and the financial officers of university institutes and other elements of the University, and also in working groups set up to deal with specific issues. To make these efforts more effective, CTU decided to incorporate a number of economic and administrative themes into the Institutional Development Plan, which gives public universities access to funding to develop key areas of their activities, including funding aimed at improving the functioning of support activities for the main university processes.



Methods for managing the faculties and other parts of the University have been specified in new internal economic norms, guidelines and directives. As in previous years, the Elanor Global and iFIS information systems and their superstructure have functioned as an integrating element.

A unifying tendency has for the first time been extended from methodology and information systems into purchasing. Electric power and gas are now purchased through the commodity market for the combined demand of the faculties and other parts of the University.

At all levels, CTU has affirmed its interest in establishing long-term binding rules for economic and financial management, which will allow each part of the University, and the University itself, to make efficient use of available funding. These measures will enable the parts to maximize their contribution to the University, and to society in the broadest sense of the word. The need to redefine the rules for distributing contributions and funding inside the University has also been affirmed. The rules should reflect changes in the view of the state on the position and the function of public state university education, and on how it is funded. ■



08

Academic Staff

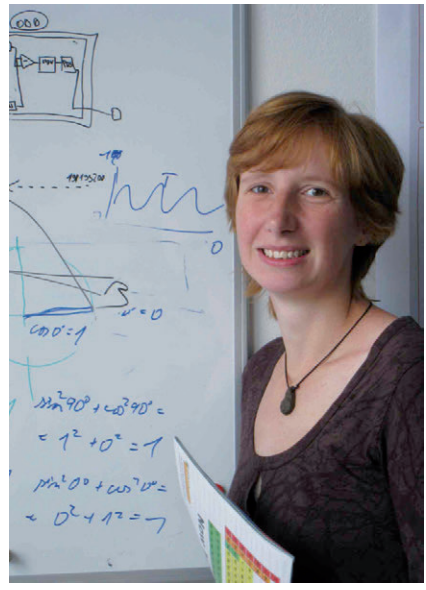
SUCCESSFUL PERSONALITIES AT CTU

While no current member of the CTU academic community is a Nobel Prize laureate, there are plenty of internationally famous personalities here. The people who are making their mark are not just distinguished scientists. Several students and young researchers who are now setting out on the academic path have already achieved recognition.
We offer mini-portraits of some interesting and distinguished members of the university community. This mosaic introduces distinguished professors, as well as students in bachelor and master's study programmes at the faculties and institutes of CTU in Prague.

Vojtěch Ciml, Faculty of Electrical Engineering
The Online Lectures project impressed not only thousands of visitors to the SlidesLive.com web pages (more than 20 000 people have visited this site, where about 1 300 video recordings of lecturers on a range of topics are posted), but also experts at Stanford University. That is where Vojtěch Ciml, a student of the Faculty of Electrical Engineering, went in the summer of 2013 to develop online education. The SlidesLive project was initiated in 2011, when Vojtech was twenty years old, and in order to prepare for his exams he decided to use recordings of lectures, which he posted on the internet. He added further applications to make the lectures as useful as possible for students. Visitors to the site can follow a lecture, and then they receive further information, e.g. slides that the lecturer has prepared, or encyclopedia sources. The synchronization of the information that is provided is a particularly useful feature. For this project, Vojtech won the eClub MediaLab Foundation prize, and on the basis of this he and his team got to spend three months in Silicon Valley. "I have got a good basic background at the Faculty of Electrical Engineering," the student of Open Informatics says. "It is not just a matter of getting through the required courses: the university environment itself is what provides the real background. Out-of-school activities like the eClub, Physical Thursdays, and many other events, provide a perfect opportunity to meet the right people."

Ing. Vladimíra Petráková, PhD, winner of the Young Investigator Award, Faculty of Biomedical Engineering

Vladimíra explains "My doctoral work at FBMI, in cooperation with Institute of Physics of the Academy of Sciences of the Czech Republic, was on developing novel probes for in-cell detection based on nanodiamond – tiny diamonds of nanometer size. I studied the luminescent properties of color centers in diamond, and developed a new method that can be used for visualizing some dynamic processes taking place in cells." This work was selected for the Young Investigator Award for the best oral presentation at two international conferences (in the USA, and in Hungary) in competition with scientists from universities such as Harvard and Oxford, and has been published in high impact journals. There is a group at the Faculty that works on developing the field of nanotechnology and its applications in biology and medicine, and aims to establish a new study program in Nanotechnology for Biomedicine that aims to provide a strong scientific and educational background for biomedical nanotechnology in the Czech Republic.



Prof. RNDr. Vladislav Šimák, DrSc.
Department of Mathematics and Physics, Faculty of Nuclear Sciences and Physical Engineering

Prof. Šimák says "I have spent some periods of time at CERN, at MIT, and at the Fermi Accelerator. Over the years, I have participated in numerous experiments on proton-proton interaction and antiproton (5.7 GeV)-proton interaction. In 1965, I set up the first collaboration of Czech physicists at CERN on antiproton-proton interactions in the hydrogen bubble chamber. When the Sepuchov accelerator produced an antiproton beam, we suggested an experiment with the Ludmila bubble chamber at JINR Dubna, in the former Soviet Union. The work lasted more than ten years, and many Czech physicists cut their teeth on this experiment at JINR Dubna and in Prague. I spent some time at CERN carrying out experiments on the UA2 collider with antiproton-proton interactions at 630 GeV."

Prof. Šimák collaborated on the D0 experiment at the Fermi National Acelerator Laboratory in the USA with the antiproton-proton collider at 1.96 TeV. This experiment came to an end in 2011, but the data is still being analyzed. He has participated in the ATLAS experiment at CERN since it began. Scientists at the Faculty of Nuclear Sciences and Physical Engineering of CTU participate actively in the experiments at CERN, gaining new results in particle physics, and contributing to the investigations of the Higgs boson and the Top quark.

Bc. Ivona Klimošová
Faculty of Civil Engineering
How should the town of Mannheim, in Germany, develop in years to come? Ivona Klimošová submitted a proposal that makes use of tried and tested principles and technologies, and also some new urbanistic forms and non-traditional technical solutions emphasizing environment-friendliness and sustainable construction. With her design, she won the Czech national round of the ISOVER 2013 Multi-Comfort House Student Contest, and qualified for the international round. "I worked on it in my master's studio project, under the supervision of architects and engineers, which was useful for the project. Studying Architecture and Civil Engineering at the Faculty of Civil Engineering has the big advantage that you get a technical education and also an education in architecture. Graduates from our department can design a wider range of aspects of buildings, and are aware of the dependency between the technical, functional and aesthetic aspects of things," Ivona says. She designed a block of flats in the form of a seven-floor passive wooden structure, placing emphasis on the technical aspects of the design: heating, air conditioning, and the heating technology. She dealt with the development of the town by designing a project where an organically formed car-free city quarter with a park at the centre is inserted into the regular structure of Mannheim.

Prof. RNDr. Miroslav Vlček, DrSc.
Faculty of Transportation Sciences, Department of Applied Mathematics
Prof. Miroslav Vlček has been working since 1974 at CTU, where he received his DrSc. (in 1994) in radio electronics. His main scientific activities include digital signal processing; digital filter design; theory of approximations; and higher transcendental functions and numerical methods. His team is currently developing a new spectral selective transformation for digital processing of non-stationary signals for speech, ECG and EEG, in cooperation with colleagues from the Faculty of Electrical Engineering of CTU. This is a multispectral transformation with time-frequency resolution that produces better results than ordinarily used tools for analysing biological signals, for example wavelet transformation and the short-time Fourier transform. Since the beginning of his engagement at CTU, he has regularly and successfully applied for foreign scholarships and lecture tours. He was awarded an Alexander von Humboldt Foundation scholarship and an Eisenhower Exchange Fellowship. In the early 1990s, he worked for 3 years as a professor of mathematics at the Junior College, University of Malta. From 2000-2010 he worked as vice-rector for international relations of CTU. During his term as vice-rector he contributed significantly to the international reputation of CTU. The University became an active member of CESAER, and of the ATHENS programme, and the number of international students at CTU increased almost 10-fold between academic years 1999/2000 – 2009/2010. He has been organizing visits to the University by famous personalities from the world of science and technology, including Nobel Prize Laureate in Physics Prof. Horst Ludwig Störmer, the "Father of the Internet" Vinton Cerf, and the Vice President for Engineering at Google, Douglas Merrill.

Karel Roubík, an associate professor at the Department of Biomedical Technology, Faculty of Biomedical Engineering, investigates scientific and clinical problems related to mechanical ventilation and respiratory care.

Mechanical ventilation is a life-saving technique, but at the same time it can cause serious damage to the ventilated lungs. He says, "The aim of our research is to find new protective ways to provide mechanical ventilation, to test them and to introduce them into clinical practice. High frequency oscillatory ventilation seems to be very protective. However, a patient connected to a high frequency oscillatory ventilator cannot breathe spontaneously, and this limits its clinical use. The so-called Demand Flow system is a novel device that may solve this problem. We have been developing it at the Faculty of Biomedical Engineering at CTU, in cooperation with colleagues from VU University Medical Center in Amsterdam, the Netherlands."

Karel Roubík cooperates closely in his research with several companies in the USA on producing respiratory care equipment, and also with several American university research centers. He was the first researcher in the Czech Republic to become an International Fellow of the American Association for Respiratory Care, the world's largest and most significant organization of more than 50 000 respiratory care professionals worldwide.

Ing. Milan Tesař

Faculty of Transportation Sciences

Milan Tesař investigated a wide range of factors affecting the safety of traffic in road communications for his prizewinning master's final project. He received an award for the best dissertation on transport and transport structures in the 9th annual Czech National Transport Structures/Technology/Innovation competition. "As a PhD student, I work on developing selected instruments for assessing the safety of road communications – for safety inspections. I work with colleagues in the framework of a project funded by the Student Grant Competition. We test some precise approaches to evaluating safety, and aim to achieve real functionality and to propose suitable improvements for very practical implementations." In the course of his doctoral studies, Milan also teaches selected topics connected with designing road communications, and as leader of the Acceptable Forms of Transport in Cities project he supervises some bachelor and master's projects.

Prof. Ing. Jiří Matas, PhD, Faculty of Electrical Engineering, Vice-Dean for Development, Department of Cybernetics

Prof. Jiří Matas conducts high-impact research in the area of computer vision and pattern recognition – more than 15 000 citations of his publications have been recorded in Google Scholar. He is attracted to theoretical problems with application potential, which has led to long--term collaboration with high-tech companies like Toyota (computer vision for an autonomous car), Hitachi (biometrics) and Samsung (image retrieval). He co-founded Eyedea Recognition, the first spin-off company with CTU co-ownership. He enjoys working with students; many Master's and PhD theses supervised by him have received awards, including the most highly regarded in the Czech Republic: the Hlavka Prize and the Ceska Hlava Doctorandus Prize. This year he was pleased that one of his PhD students received the prestigious Google Doctoral Fellowship. He is one of the founders of the Open Informatics study program that in many aspects differs from a standard CTU program and is proud of its student satisfaction level above 90%. He is the head of the Center of Excellence in Multi-Modal Interpretation funded by the highly selective Czech Science Foundation scheme.

Mgr. Ing. Michal Jex, Faculty of Nuclear Sciences and Physical Engineering

Michal Jex was awarded second place in the Siemens Prize competition for his master's project on Geometrically Induced Properties of the Ground State of Quantum Mechanical Hamiltonians with Contact Interactions. His study dealt with the dependence of energy in the ground state on the arrangement of the point interactions in space and in graphs. Models with point interactions can be used for modeling systems with short-range interactions, for modeling the motion of electrons in organic materials and in crystals, in modelling quantum waveguides, and in many other applications. "I have an excellent background from my studies at the faculty, where I took high-quality courses in physics and mathematics. Students are prepared for future scientific research by taking part in international conferences and by being integrated into international research groups," Michal says. The topic of his doctoral dissertation in mathematical physics is the spectral properties of quantum graphs. "These models are widely used as suitable approximations for complex systems," Michal adds. He also teaches seminars on Mechanics and Thermodynamics, and on Statistical Physics.

Prof. Ing. Vladimír Mařík, DrSc., Dr. h. c.
Director of the Czech Institute of Informatics, Robotics and Cybernetics at CTU

"I carry out research on distributed intelligent systems, so-called agent systems, and I participated in forming the internationally recognized Prague School of Agent Systems. I have participated in forming the philosophical and theoretical basis for so-called light agent systems that function on PCs, and in work leading to a number of industrial applications, controlling the flight of Unmanned Area Vehicles, etc. I try to take theoretical research all the way to practically applicable solutions," says Prof. Mařík, who is a member of the board of governors of the IEEE Systems, Man and Cybernetics Society, participates in linking CTU with the European Smart Cities initiative, and is the technical lead of the large EU ARUM research project, among other interests and activities. He collaborates with dozens of academic and industrial research institutions all over the world.

Ing. arch. Mirjana Petrik, Faculty of Architecture

The city and the child – how do they get along with each other? The young architect Mirjana Petrik is finishing off her doctoral dissertation at the Faculty of Architecture on Designing and Planning Child Friendly Cities. She has included children between the ages of 3 and 6 in the planning process, and has spent several years studying the theme of children in the city from the point of view of architecture and other related fields, such as psychology, sociology and ecology. She has developed a special method for involving pre-school chidren in the process of analysing and designing public places in cities and buildings for children to live and learn in. She attempts to raise awareness of the need to perceive the city from the viewpoint of all of its residents, including children, and from a child's perspective, not only in the planning stage, but also in the area of designing public street furniture. With the help of a Fulbright-Masaryk scholarship for PhD students and scientists, she pursued her research in the Child, Youth and Environments Center for Research and Design at the University of Colorado. Since returning to CTU, she has worked on a project to link Prague with the international Child Friendly City network. In the 2013/2014 academic year, she is coordinating the Child Friendly City project, which is being carried out in collaboration between the Faculty of Architecture and the Prague 3 city district. Apart from her academic work, she gets involved in various community projects to improve school gardens, community centres and public spaces in general. She has set up an initiative to bring together local residents and experts in order to implement the Child Friendly principles at local level.

Prof. Ing. Zdeněk Bittnar, DrSc.
Faculty of Civil Engineering, Department of Mechanics, University Center for Energy Efficient Buildings

"Since joining the Faculty in 1990 I have initiated, processed and managed a number of research projects. These have provided funding for research mainly carried out by young scientists. Today, these people are associate professors and professors. They write their own excellent proposals," says Prof. Bittnar. "My recent initiative has led to the establishment of the University Center for Energy Efficient Buildings. The project is financed by the EU Structural Funds, and provides research opportunities for almost 100 people. Half of these are PhD students and postdocs. Experimental equipment has been designed to support innovation in the field of Smart Cities. The participation of four faculties in the activities of the center is something new to CTU, and enables a holistic approach to solving research problems related to energy saving, saving of raw materials and the use of IT to improve the quality of life. Such a large project could not have been set up without the experience gained from membership in the High Level Group of the European Construction Technology Platform. From the very beginning, the project has aimed to encourage participation in the HORIZON 2020 program. I am glad that have been able to motivate many people from the Faculty to do research. During my tenure as Dean of the Faculty, 26 associate professors were appointed professors and 54 assistant professors were appointed associate professors. This would not have been possible if they had not participated in research."

Prof. Ing. Jan Macek, DrSc., Vice-Dean and head of the Department of Automobiles, Internal Combustion Engines and Railway Vehicles, Faculty of Mechanical Engineering

"Until such time as people come to the view that we can live without personal mobility – and just use contacts mediated by information networks - personal and mass mobility by means of vehicles will continue to be a source of pleasant experiences, such as the joy of travelling, and also of problems such as pollution of the environment and deadly accidents. We work to minimize these problems in new vehicles, and thereby help our automotive industry to retain its competitiveness in world markets and continue to be a major element in the Czech GDP and in Czech exports," says Prof. Macek. He specializes in applied thermodynamics, internal aerodynamics and physical chemistry, applied to improving the efficiency and reducing the emissions of internal combustion engines through a combination of mathematical simulation and experimentation. "At the present time, there are opportunities to revisit some old ideas that can only now be developed and implemented after the introduction of flexibly controlled mechatronic elements, for example variable compression ratio, valve timing, etc., including the revival of electric cars. At the same time, efforts are being made to introduce innovative vehicles with new ways to store and release traction energy, for example hybrid internal combustion and electric drives, electric engines and fuel cells for hydrogen vehicles. At this juncture, research is highly desirable, because it can help to avoid making expensive mistakes," he adds. "I have to stress that I would not have achieved any success without collaborating with an excellent team. In the past, the team consisted mainly of people from my own generation, but today the rejuvenation process is in full swing. We do not work in isolation – we collaborate on projects with other institutes at the Faculty of Mechanical Engineering, with experts on mechanics and mechatronics, technical mathematics, fluid mechanics, etc., and also with the Faculties of Electrical Engineering and Transportation Sciences."

Ing. Radek Tichánek, PhD, Faculty of Mechanical Engineering
Researcher at the Josef Božek Vehicle Centre for Sustainable Mobility, founder and leading personality in the CTU CarTech team

How did the successful CTU CarTech team, set up by Radek Tichánek and now one of the leading teams in the world, come into being? "The idea of setting up a Formula Student team at CTU in Prague came up in 2007, when we heard how teams at universities abroad do it. There was encouragement from Prof. Macek, head of the Institute of Automotive Engineering, who pronounced that the time was right for an attempt to set up a Formula Student team here," the young scientist recalls. The path from the idea to the present-day ever-improving team has not been straightforward. There was no infrastructure, no production area, no equipment, no money, and there were no partners to support the project to construct racing cars and take part in the Formula Student/SAE competition, which was at that time an unknown event here. One thing, fortunately, was not lacking, and that was the enthusiasm of many dozens of students, who volunteered to work in the team in their free time, and laid the foundations for the present-day results. The team that first started in the Formula Student Germany competition in 2009 with an internal combustion engine car has kept on achieving better and better results each year. In the worldwide table of more than 500 universities taking part in the competitions, CTU in Prague took 15th place in 2013. In 2011, the CTU CarTech team also entered a car for the electric engine formula competition, and this car now occupies 11th place among more than 60 competing universities from all over the world. "These placings present a very positive image of CTU internationally. The team would not have been able to achieve what it has without the university's high-quality infrastructure as concerns, for example, the availability of the necessary software for constructing a car, and facilities for tests on materials and engines. Complicated components are produced in collaboration with industrial companies that support the students, give them consultations and implement their designs. In this way, students gain the kind of practical experience in manufacturing real products that universities are not usually able to provide. The competitions provide welcome feedback on the quality of students' design and production work," Radek Tichánek adds. The years of experience of designing cars and racing with them are reflected in the new specialized courses that the university's faculties offer on technology for racing cars.

Bc. Eliška Šestáková
Faculty of Information Technology
Eliška Šestáková was awarded the Dean's Prize for an Outstanding Bachelor Project for her work under the title Implementation of the Game Tower Defense, in which emphasis was placed on the way artificial intelligence was used to direct and navigate units, and the work also included an analysis of methods for finding paths and evaluating them when implementing the game strategy. Eliška is now studying on the master's programme in Systems Programming (profile: Theoretical Informatics), and she is pleased that she chose to study at a technical university. "Before I came to FIT, I only knew basic programming, and I was more interested in creating graphics and web pages. Now making algorithms and exploiting the possibilities of programming languages is closer to my heart. I consider studying information technology to be not just very interesting, but above all highly applicable in the future. I enjoy discovering and researching the new things that this dynamic field of specialization keeps offering up."

Prof. Ing. Bořivoj Melichar, DrSc., is a well-known researcher on the principles underlying the construction of software systems. His research interest is in the theory of algorithms for constructing compilers for various kinds of formal languages. He works on parsing, and on formal and attributed translations. He has used his strong background in the theory of formal languages and automata as a basis for his research in the area of text processing algorithms. This field is now known as stringology. He started his research in stringology 20 years ago, and soon after this he founded the Prague Stringology Conference, which continues to be held annually. The conference has an international program committee, and is nowadays recognized worldwide as a forum for presenting new ideas in stringology and related disciplines. Prof. Melichar's background in the theory of automata was then exploited and built on in the development of a new field of research on hierarchical structures represented by trees. This field is now known as arbology. Prof. Melichar's wide range of research interests extends to processing directed acyclic graphs (dags). This field is now known as dagology. He has formed a group of colleagues and doctoral students who are known for developing new ideas for solving complicated problems in a simple way. Prof. Melichar has published almost 50 tutorial scripts for students and more than 100 scientific publications. He is a respected member of the scientific community in several research areas. In the 1990s he was head of the Department of Computer Science and Engineering at the Faculty of Electrical Engineering, Czech Technical University in Prague, and in 2010 he moved to the Faculty of Information Technologies (opened in 2009).

Prof. Ing. Vladimír Kučera, DrSc., dr. h. c.
is an internationaly known researcher in systems and control engineering. He publishes in the leading journals in the field and has earned some 3 000 Web of Science citations; his Hirsch index is 26. He is the first IEEE Fellow in the Czech Republic. He is an Advisor and a Fellow of IFAC; he was President of IFAC and brought the 16th IFAC World Congress to Prague in 2005. He was appointed a Chevalier dans l'Ordre des Palmes Académiques, and has received honorary doctorates from Université Paul Sabatier, Toulouse and Université Henri Poincaré, Nancy. Professor Kučera combines research with teaching and involves students in his research projects. He is the manager of the Centre for Applied Cybernetics, which is a Competence Centre of the Technology Agency of the Czech Republic and has a strategic research plan till 2019. He has been the principal investigator of 25 other national and international research projects.
In the course of his career, Vladimír Kučera has had the pleasure and privilege to work with leading researchers from 20 countries. He contributed to the theory of Riccati equations and pioneered the use of polynomial equations in the design of control systems. His best result is the parametrization of all controllers that stabilize a given plant, known as the Youla-Kučera parametrization, which has become a new paradigm in robust and optimal control. These results are recognized as the Czech scientific school in control engineering.

Prof. Ing. arch. Ladislav Lábus, Hon. FAIA,
Faculty of Architecture,
Head of Department of Design Studios III
Ladislav Lábus often works on issues of incorporating buildings into a historical townscape, and proposing renovations and reconstructions of functionalist and industrial buildings. He is a recognized expert in this field, and is a member of the Scientific Council of the National Monument Institute. His work on accommodation for seniors and protected accommodation for people with disabilities is also recognized. He has been engaged for a long time in transforming the institutional system of social care into integrated systems. He is also known for his work on revitalizing housing estates and panel buildings.
Since he joined the University, he has worked intensively on developing the study programmes at the Faculty. He has also contributed his experience in this field to national and EU projects. Projects by Ladislav Lábus have won the prestigious Architects' Grand Prix, the Building of the Year award, and several other prizes. Three of his projects have been nominated for the Mies van der Rohe Award, an EU prize for contemporary architecture. In 2013, he was awarded the prestigious title of Honorary Fellow of the American Institute of Architects.

9

Cooperation with Companies and Institutions

BENEFICIAL FOR COMPANIES AND FOR THE UNIVERSITY

On television and elsewhere in the media, we quite often hear the words "according to an expert from CTU ... such-and-such methods should be used and such-and-such measures should be taken." In recent times, these words have been used very often in connection with problems in transportation. Specialists from the Faculty of Transportation Sciences have been helping to modernize the motorways in the country and the transport system in Prague. Their colleagues from other faculties have come to attention, for example, through their collaboration with NASA, and with companies in the aerospace, automotive and other industries. CTU has plenty to offer in the field of practical applications.

The day-to-day activities of a technical university involve not just teaching, but also applications-oriented research. Great potential is opened up by the capacities of the University. There is very extensive collaboration between the faculties, institutes, departments and other elements of the University, on the one hand, and companies, state institutions, research workplaces, secondary schools and other organisations, on the other. The words of specialists from CTU carry weight, not only in connection with new materials and products, but also in investigations of accidents involving buses carrying tourists to the Croatian seaside. Other examples are specialists from the Faculty of Civil Engineering, who are called in for expert opinions on collapsing buildings, or on smaller matters like shoddily-constructed car parks in town centres.

Below, we offer some examples of collaboration with industry and with institutions in the form of providing useful practical expert opinions. This kind of work also makes potential students and potential partners for future research projects more aware of the quality of the work carried out at CTU. ■

COLLABORATION WITH INDUSTRY AND COMMERCE ON CREATING INNOVATIONS AND ON TECHNOLOGY TRANSFER

Collaboration on creating and transferring innovations usually takes place on the basis of an agreement with industrial or commercial partners, or through collaboration in the framework of a joint application for a grant-funded project. The agreement, or collaboration agreement, stipulates the way in which the project outcomes will be handled, how intellectual property rights will be protected, and how the outcomes will be distributed.

Numbers of agreements signed with industrial and commercial companies on the use of research, development and innovation results in 2012:

Total number of valid agreements in 2012:	1 286
New agreements signed in 2012:	934

Faculty of Mechanical Engineering

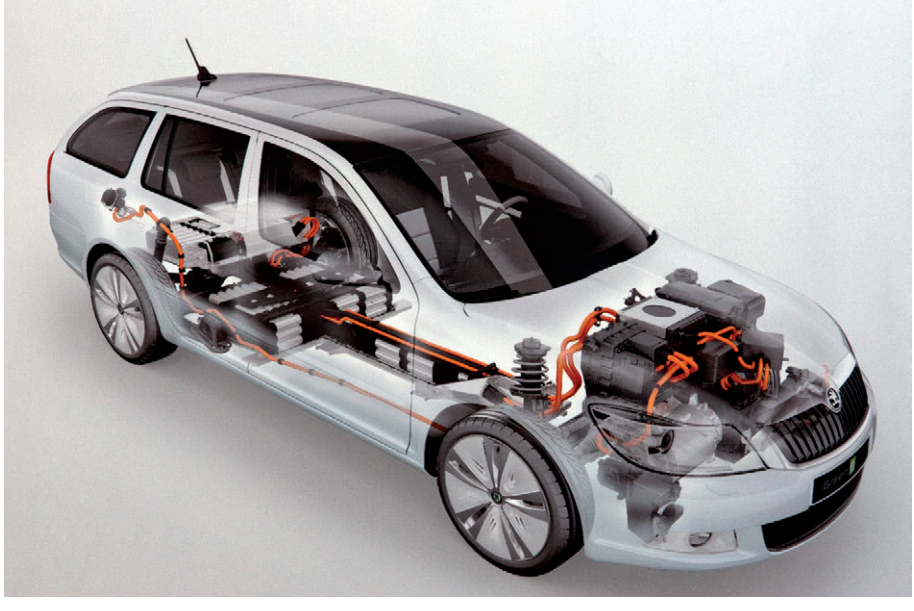
The issue of cooling, or of removing low-potential waste heat from processes for transforming heat energy into mechanical work, has recently been attracting great attention in a range of technical applications. The reason is that these processes are in most cases energy-demanding. With the major advances in automotive technology in recent decades, it was only a matter of time before each of the components in the cooling cycle in this field would be optimized. Tests on components and groups of components for cars in real conditions are time-consuming and very expensive. For this purpose, a dedicated workplace was set up at the Faculty of Mechanical Engineering at CTU by TechSoft Engineering, MECAS ESI and the Technical University in Brno. The work plan and the timetable for this workplace are coordinated and funded by Škoda Auto, the main project coordinator. Work is carried out on the aerodynamic properties of real exchangers, e.g. their pressure losses, their inferred power effect, and also their ability to remove waste heat into the environment. There is also collaboration with Škoda Auto in the Student Formula CTU CarTech project, and with specialists in the Faculty of Transportation Sciences on vehicle safety, etc.

Faculty of Electrical Engineering

Researchers and students at the Center for Machine Perception at the Department of Cybernetics at the Faculty of Electrical Engineering are developing the technology for a future robotic mission to Mars and other planets in our solar system. Within the framework of the EU 7th Framework Programme PRoVisG and ProViScout research projects, they collaborate with NASA in the USA, with the European EADS consortium, with the German DLR agency, and others. Alongside specialized research studies carried out in collaboration with industry, the Faculty attaches great importance to providing expert opinions and reports. These are needed for a broad range of breakdowns and other crisis situations that can occur from time to time due to the technical demands of industrial processes.

Faculty of Transportation Sciences

The Faculty has been engaged in long-term collaboration with the state administration, with state-run institutions and with dozens of companies, mainly in the transportation sector. Major state and public sector partners include the Ministry of Transport and the Ministry for Local Development, the Central Bohemian Region, the City of Prague, and a number of other towns, for example Opava and Příbram. State-run partner companies include the Road and Motorway Directorate of the Czech Republic and the Technical Communications Adminstration of the Capital City of Prague. The Faculty also collaborates with companies including: AŽD, DEKRA AUTOMOBIL, ELTODO, PRAGOLET, ROPID, SILMOS, ŠKODA AUTO, Telefónica CR, Volkswagen, ÚAMK, and others.



Faculty of Nuclear Science and Physical Engineering

The Faculty staff collaborate with public institutions and companies, e.g. through cooperation on joint projects (mainly with institutes of the Academy of Sciences of the Czech Republic), and carrying out a range of supplementary tasks. Institutions and companies that collaborated with the Faculty in 2012 include the State Office for Nuclear Safety, the State Institute for Radiation Protection, the Radioactive Waste Repository Authority of the Czech Republic, DIAMO, ÚJV Řež, IKEM Prague, Honeywell, AERO Vodochody, NPP Temelín, VF Černá Hora, and ENVINET.

Faculty of Biomedical Engineering

One of the main partners of the Faculty is the Town of Kladno, which has cooperated in the development of the Faculty through major Education for Competitiveness and Science and Research for Innovation projects, and has also cooperated in extending the teaching facilities. Other main partners are the Ministry of Health of the Czech Republic and the Institute for Clinical and Experimental Medicine. The Faculty is an associate member of the NANOPROGRES cluster. The Faculty also cooperates with CleverTech s.r.o., the rehabilitation institute at Kladruby, the Regional Centre of the rescue services for the Central Bohemia region, the hospitals in Kladno, in Slaný and in Rakovník, with LINET spol. s r. o. and BEZNOSKA, s. r. o., with hospitals in Prague, such as Všeobecná, Motol, Královské Vinohrady, Homolka, Thomayerova, the Institute of Hematology and Blood Transfusion, and other medical and health service institutions, including the Psychiatric Hospital in Bohnice and the Central Military Hospital. Other collaborating institutions include KPMG Česká republika, s.r.o., the Institute of Physics of the Academy of Sciences of the Czech Republic, the State Institute for Nuclear, Chemical and Biological Safety at Milín-Kamenná, the Association of producers and suppliers of health products, the BTL Group, Johnson & Johnson, ERILENS s. r. o., EMARK s.r.o., HZS ČR, AČR, PČR, and UCEEB at Buštěhrad near Kladno.

Faculty of Information Technology

Thanks to collaboration with CISCO, a network laboratory has been equipped, in which not only courses in accredited study programmes are taught, but also CISCO Academy courses. The Faculty has obtained some applied research grants (from Profinit and from Altron), and also collaborates commercially with companies including Profinit, Agromont, and SGS. Collaboration with leading ICT companies, e.g. Seznam and Gooddata, and support from companies, e.g. Profinit, Barclays Capital, NVIDIA, Oracle and HP, helps to provide specialist literature and prizes for outstanding final projects presented by students.

Faculty of Civil Engineering

The fields of civil engineering embraced by the Faculty, and in which it collaborates with the construction industry, cover a broad range, from construction and materials, through architecture, water management and the environment, to fire safety, geoinformatics and development work for GPS applications.
Collaboration with companies and institutions in the framework of science and research brings new knowledge into the classroom, and provides opportunities for an ever-increasing range of stimulating student projects. ■

NUMBERS OF EXPERTS FROM INDUSTRIAL AND COMMERCIAL COMPANIES TEACHING ON ACCREDITED STUDY PROGRAMME

	Numbers of external experts
Faculty of Civil Engineering	223
Faculty of Mechanical Engineering	81
Faculty of Electrical Engineering	54
Faculty of Nuclear Sciences and Physical Engineering	102
Faculty of Architecture	61
Faculty of Transportation Sciences	116
Faculty of Biomedical Engineering	39
Faculty of Information Technology	30
Masaryk Institute of Advanced Studies	44
Total	**750**

COLLABORATION WITH SECONDARY SCHOOLS

The so-called Road Show for secondary schools is an annual university activity aimed at school leavers. A specially-trained promo team consisting of students, including doctoral students, from each of the University's faculties visits schools that have asked through their education advisors for a presentation by CTU, and also other selected schools, mainly from regions where rival technical universities are not strongly represented. The promo team provides information for secondary school leavers about the study programmes and fields of study at CTU, about the attractiveness of science and engineering, and about the ease with which CTU graduates find jobs. On these school visits, the students fill in CTU questionnaires, giving their e-mail addresses and agreeing to have information sent to them in e-letters about study opportunities at CTU, about Open Days at the faculties, the latest news bulletins, competitions and interesting information about science and engineering. This part of the information campaign is carried out by means of the special CTU Magnificent Seven web site (www.sedmstatecnych.cz), where a wide range of items about life at the University are published. Of course, we also collaborate with students via social networks, such as Facebook.

We arrange special individual internships, under the title Junior Tech University, for selected secondary school students. Following our publicity campaign and marketing activities, young people start applying for these internships and submit motivation letters. We select the best applicants and find a suitable mentor for them at CTU. The mentor gives them individual attention. Our aim is to demonstrate to students individually the opportunities for studying at CTU, and to

introduce them to the University while they are still studying at a secondary school.
Some of our activities are specially directed at girls studying at secondary schools. There are various field trips, presentations, workshops and competitions, and, last but not least, a competition for the best scientific or technical project (www.holkypozor.cz).
Every year, CTU is an exhibitor at the Gaudeamus post secondary school and lifelong learning fairs that are held in Brno and in Prague. Interesting displays show study opportunities, interactive exhibits constructed by CTU students, etc. Each year, we participate in the competitions at these fairs for the best display. The winner is chosen by the secondary school students who visit the exhibition. In recent years, we have twice won this competition, which shows that secondary school students rate CTU very positively.

We also make non-traditional presentations to young people in non-traditional locations. We make presentations in the framework of the Prague Museum Nights, in major museums, such as the National Museum and the National Technical Museum, where we set up so-called CTU Tech Zones, and interpret CTU science and technology in a variety of ways. We make presentations at multicultural festivals like Rock for People and Sázavafest, where we try to make an impression on young people, especially secondary school students, and to popularize engineering and engineering education. For gifted primary schoolchildren and for younger children at secondary schools, we prepare the Lion's Den, a year-long correspondence competition on the borderline between mathematics and informatics, which leads up to the high point – a summer camp. ■




10

Other Activities

SPORT IS AN INTEGRAL PART OF STUDENT LIFE

At CTU in Prague, physical education activities are provided mainly via the Institute of Physical Education and Sport. There are regular sports activities in the framework of Physical Education courses in a wide range of sports (football, ice-hockey, volleyball, basketball, floorball, frisbee, table tennis, archery and many other sports). The Institute offers about 40 physical activities in regular courses, as well as once-off sports events.

Among the students of CTU in Prague, there are some successful Czech international sportsmen and women, who win medals in world and European championships, and in other major international events.
The Institute organizes summer and winter physical education courses mainly in outdoor sports that involve spending time in the countryside. In the summer months, the main courses on offer are canoeing, windsurfing, cycling, climbing, tennis, horse-riding, and various other sports (ball games, frisbee, archery, swimming, softball, etc.) In the winter months, students can do downhill skiing, crosscountry skiing and snowboarding. Each year, the Institute of Physical Education and Sport, under the auspices of the rectorate of CTU in Prague, organises a competition for the best CTU sportsmen and sportswomen. The winners receive sports scholarships.
Rowers and canoeists, who achieve outstanding results at international level, in university and other championships, are among the most successful CTU sportsmen and sportswomen.
Outstanding sportsmen and sportswomen linked with CTU are a good advertisement for the University. There are CTU students in the Czech national teams for rowing, canoeing and floorball. Ilona Hambergerová, CTU sportswoman of the year in 2011, competes successfully in taekwondo, and other students also do very well in other sports. The University helps students to combine demanding study programmes with top-level sport.
Not only individual sportsmen and sportswomen, but also CTU teams have been achieving outstanding results. The CTU ice-hockey team regularly wins university tournaments in Europe. The frisbee team won the Czech academic championship. CTU students regularly achieve good results at Euromilano, where more than a thousand sportsmen and sportswomen from dozens of European universities take part, and CTU teams take top places.
The University organises the traditional 17th of November Run and the Czech Academic crosscountry championships. The races are run in the magical environment of Hvězda Park in the Prague district of Bílá Hora.
The facilities for physical education at CTU have been extended and improved in recent years. The modernized sports centres are used by students and non-students in year-round activities organized by the Institute of Physical Education and Sport. They are also made available to university students and staff for recreational sport.
The main sports facilities of the University include indoor sports halls, multi-purpose gymnasiums, facilities for outdoor sports, climbing walls, an archery hall, a table tennis centre, artificial-surface tennis courts, and an inflatable tennis hall for winter use. ■

Assoc. Prof. PaedDr. Jiří Drnek, CSc.
Director of the Institute of Physical Education and Sport CTU, an A Licence handball trainer,
Chairman of the Association of Leading Departments of Physical Education at Universities in the Czech Republic

SUCCESSFUL SPORTS ACTIVITIES

About one-third of the students at CTU (approximately 8 000) sign up for the physical education activities (required courses, optional courses, special courses, etc.) that are provided by the university's Institute of Physical Education and Sport. Is this because CTU has an excellent framework and facilities for sport?
At other universities in the Czech Republic there are not such strong links between sports activities and university studies. The participation rate is normally somewhere around 10%. The active participation in sport at CTU is because of the really rich range of sports and sports facilities that we offer. There are 41 sports and physical activities, so there is something for almost everyone. This offer can attract even students who are not typical sportsmen and sportswomen. They can choose from a number of non-traditional sports, for example archery, yoga, wall climbing, geocaching and zumba. If we did not have such a wide range on offer, these non-sporting students would not sign up for optional physical education.

The Czech team at the Olympic Games in London included several CTU students – the sisters Jitka Antošová and Lenka Antošová in the sculls, oarsmen Jiří Kopáč and Milan Bruncvík, and middle-distance runner Tereza Čapková. Do students who are active sportmen and women have adequate conditions for combining their studies with top-level sport?
We certainly try to help. For example, we help with negotiating dates for examinations, and we collaborate with the faculties over the award of special scholarships to enable students to compete for Czech national teams, and to represent CTU at national academic championships. I must say that the faculties fully understand and give their support.
Among our student sportsmen and sportswomen there are not only Olympic competitors, but also academic world champions and others who have achieved high positions in top competitions. Unfortunately we do not use these results as well as they do in the USA in the university's publicity campaigns. Over there, university sport has high prestige, and for many people it is the reason why they choose to study at a given university. Nevertheless, the slogan

"Study at CTU – Do Sport at CTU" is very well received by people interested in studying here.

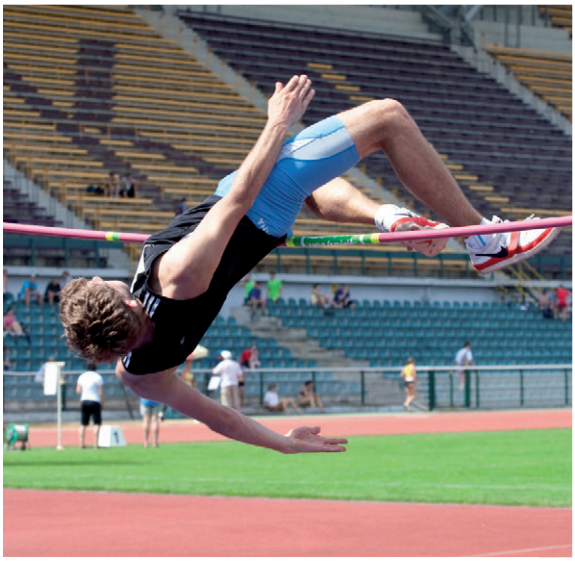
In which sports do CTU teams do best in the University environment?

The CTU ice-hockey team is regularly successful in European tournaments. They won the international ice-hockey tournament for the CTU Rector's Cup, in which teams from eight European universities took part. We have other very successful teams, for example in futsal, softball and frisbee, which regularly win the Czech academic championships. We regularly get leading places in in the Euromilano Games, in which more than a thousand sportsmen and sportswomen from several dozen European universities take part. We also have some success at the Czech Academic Games, where CTU representatives are among the best, and we take top places in the overall classification.

Can we say that sport has a green light at the University?

Definitely. I should mention the CTU sports facilities that have been built up in recent years. The Pod Juliskou indoor sports centre, with courts, gynamsiums, a table tennis area, an archery hall, a climbing wall and a fitness centre, would certainly be the pride of any modern European university. This area is complemented by the artificial-surface tennis courts at Kotlářka, which are covered in winter, and by the university boathouse at Mala Chuchle. ■


WWW. TIME-OUT. TO



CTU AND SPORT

- regular termtime physical education
- once-off sports events for students and university staff: Rector's Day (all sports), CTU Rector's Cup (ice-hockey) and others
- university sports championships in the Czech Republic, Academic Games and international sports events

ON THE WAY TOWARD E-CTU

How can we characterize the IT environment at CTU?

The Wi-Fi connections in almost all the university buildings and spaces are just the tip of an iceberg consisting of the web infrastructure, the servers and data storage. As one of the support elements of CTU, the Computing and Information Centre has a broad range of responsibilities and activities. These begin with the web infrastructure and end with organizing video recordings and photographic documentation of university events, followed by processing the data into the form of web pages and other media for distributing information and data. Between these limits, the main task is to ensure the operation of the components and applications for study, science and research, and also for administrative purposes, and to provide support for the systems and develop them. Just to give you and idea of what we do: there are about 50 operational tasks, and each year there are about 20 projects to introduce changes. All this agenda is covered by a staff of 60, including administration and services. In order for the CTU Computing and Information Centre to be able to meet the needs and the expectations of about 30 000 users, it is necessary to have clearly specified rules and guidelines. The orientation of the Centre is based on close links with the CTU Strategy, and on forming a special subordinate version of the Strategy for ICT. The related internal ICT strategy under the title On the way toward e-CTU sets out the basic vision, together with a series of tasks to be fulfilled and projects that are anticipated in the university environment over the next five years.

The basic points in the vision are:

- Create a highly productive and cost-effective information and communication environment, aimed at contributing to the functioning of an open information society.
- Provide major support, through extensive use of information and communication technology and through effective use of university information, aimed at improving the performance and raising the quality of services for the university administration, for the teaching and learning process, and for scientific work, via clearly and transparently defined measures and processes.
- Raise the number, the range and the quality of the services provided online in the university environment, with a defined level of accessibility and reliability.
- Set up and maintain security rules aimed at maximum security for all processed information, especially for personal data and for trade secrets.
- Provide simple and straightforward dealings between the university and people interested in studying at the university, students, graduates and others, through the use of IT. Provide support for cashless payments for fees and services.
- Prepare all development and operational measures in good time, in the form of sustainable development within the financial limits determined by the University management.

These rather general principles have to be linked with specific projects selected with a view to providing the greatest possible added value. Selecting the best way to improve our services is the key to the viability of the whole range of linked data sources, and to the services provided to deal with them. ■

THE CENTRAL LIBRARY

An important milestone for all CTU faculty and institutional libraries was the year 2009. In this year the Central Library (CL) of CTU was founded as an independent part of the university aimed at providing information support for educational, research and creative activities at CTU. It is located in the new building of the National Technical Library in the center of the main CTU campus.

The university is an inspiring environment, where students, faculty members and researchers gain their motivation to work and produce research results. The university library is an integral part of this academic body; it serves its academic community by providing all necessary information support for their professional activities and by forming their key competencies for their lifelong education, future profession and career. Its position is defined in the organizational structure of the CTU, and its mission is driven by the traditional concept of an academic library as well as by new trends in library services that are generally in correspondence with the long-term development strategy of CTU.

The library's success and prestige is based on its ability to adapt itself to new conditions and needs. The starting points are cooperation within the university, cooperation with domestic and international university libraries, and creating the potential to innovate the library's services. The library reacts to new challenges in the global knowledge environment within and outside the university community, especially with respect to new models of scholarly communication. It continuously observes new trends, gathers documents and information for the university management, analyzes user needs, actively offers support and new solutions and thus proves its unique role in the university environment.

All library services are personalized and targeted at particular user groups. Key library activities can thus be divided into multiple areas, closely related to each other:

Library collection management and services

The library focuses on keeping and maintaining traditional and electronic collections that to a great extent cover the needs of the CTU community. The materials are mainly acquired on the basis of user needs and in close cooperation with the community. Besides information resources, the library also focuses on traditional library services such as loans, electronic document delivery, and reference services.

Providing access to electronic information resources

The library administers and maintains university-wide continuous access to prestigious electronic resources for scientific and technical disciplines essential for educational and research activities of the CTU community. Those include the IEEE/IET Electronic Library, ACM Digital Library, e-journal collections of scientific publishers Elsevier, Wiley, and Springer, and the citation databases Web of Science and Scopus. For easier information searches in multiple resources, centered and unified user-friendly access to all resources is provided through the Summon web-scale discovery service tool.

Further information support for education and research activities

Information support for CTU research fields focuses on assisting with activities related to publication of research results, the national R&D assessment system, and services related to work with citation databases, as well as help with submitting research outputs to citation databases. Another important new trend in scholarly communication is supporting Open Access publishing, and sharing scientific information through Open Access initiatives as well as identifying and using Open Access research resources. Building the institutional repository and defining the Open Access policy within the university is fundamental for keeping the university visible in the information environment, and this is also a key task for the library.

Information education

Information support for CTU research fields focuses on improving students' and young researchers' information literacy. Support is carefully targeted at particular user groups. CL provides information and organizes seminars and classes focused on recommendations on writing research papers and theses, on publication and citation ethics, and on plagiarism for all- bachelor, master and PhD students.

Communication with users

The main communication, marketing and promotion tool of the library for the users' first-hand experience with the library is the library website. Thanks to the unlimited space for its presentation, the library can present its services targeted according to its users' needs, and can guide users efficiently through the website towards the desired information.

Social networks like Facebook enable informal communication with users about new services, and events like training sessions and seminars. It also provides a way for the library to connect itself with other parts of the University. Other widely-used communication channels are various brochures, flyers, posters, and also publishing this information of the websites of the University and the faculties. ■

Library in numbers (2012)

Library collections: 483 348
Number of registered users: 28 947
Number of library visits: 67 359
Number of loans (physical documents): 85 653
Number of employees: 35; FTE: 28,5
Electronic information resources: Bibliographic databases: 4; Fulltext databases 10; Citation databases: 2

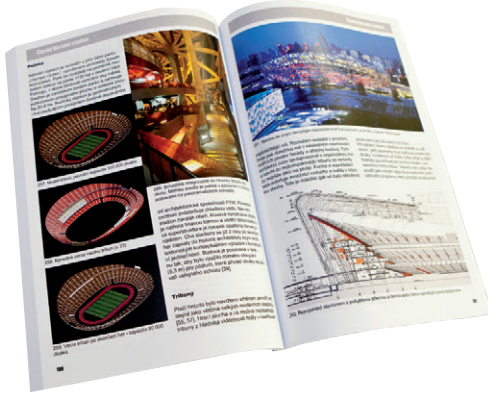
THE CTU PUBLISHING HOUSE

The Publishing House is a special-purpose CTU facility that issues study materials and scientific literature, new magazines, specialist journals, and other printed matter.

Over a period of almost 50 years (the Publishing House was set up in 1964), it has published about 11 500 specialist titles, an average of about 250 mainly technically-oriented texts for specialists each year. The main types of publications are study notes, specialized books, monographs and university textbooks. The Publishing House also prepares publicity materials and other printed matter, compilations, inaugural lectures, information brochures about university activities and events, etc.

Pražská technika and TecniCall

The editorial and graphics studio of the Publishing House prepares two university news magazines. Pražská technika is a magazine that presents topical information about events at CTU. It focuses on news about studies and about research, presents successes achieved in the Czech Republic and abroad, interviews university personalities, and records a broad range of CTU activities and events.



TecniCall is a magazine that presents scientific and research results in connection with industrial and practical applications. Each issue focuses on a specific topic of current interest, for example CTU's collaboration with CERN, intelligent buildings, etc. In addition, the magazine carries descriptions of university workplaces, interviews with successful scientists, etc.

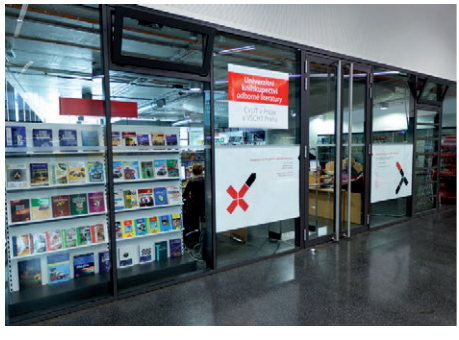
Acta Polytechnica

A scientific journal published by CTU. The main title is accompanied by the subtitle Journal of Advanced Engineering, which defines the scope of the journal more precisely. It covers a wide spectrum of engineering topics, physics and mathematics. Since 2011 Acta Polytechnica has been included in the Scopus database.

New University Bookstore

The Technical Literature Shop (situated on the ground floor of the National Technical Library) supplies lecture notes as well as scientific and technical publications in many branches of science and technology. The University Bookstore is one of the largest specialized bookshops in the Czech Republic.

We sell lecture notes and textbooks for all faculties and facilities of CTU, monographs, scientific and technical literature, foreign-language publications and specialized technical journals, publications in various areas of fiction and non-fiction, language-learning materials etc. ■



INOVACENTRUM – CONNECTING SCIENCE AND COMMERCE

Inovacentrum CTU is a university center for cooperation with companies in the Czech Republic and abroad. It was founded in 2010 after merging its two predecessors – the Center for Cooperation with Industry at the Faculty of Electrical Engineering and the Technology and Innovation Center. Inovacentrum offers its services to companies and university staff, and ensures that mutual projects run smoothly.
In this way, Inovacentrum fulfills the so-called 3rd role that is required from a modern university. Dr. Jaroslav Burčík, Director of Inovacentrum, says: "These days, cooperation between the university and industry often requires the involvement of large teams, sometimes from different areas of expertise. Negotiating and preparing projects of this kind takes time, and enough time is not always what professors have. Furthermore, if the university is aiming to be a significant partner for businesses, it has to have somebody systematically working on interconnecting the two entities. At CTU in Prague this role belongs to Inovacentrum. Its main mission is to support cooperation between university and industry, and to be a professional partner for academics and company representatives. Inovacentrum aims to be a partner who will make their cooperation easier and enable them to realize complex and extensive projects."

After the first contact with a client, Inovacentrum employees look to specify the task in a broader context. This clarification is very important, as it leads on to a search for the right solutions. It is important that

the entire team – including academics – is acquainted with the context. Unlike the academics, the company knows everything about its product. The company knows which markets it serves, and it usually knows which solutions will be successful in those markets. "Our ultimate goal is to define a precise task so that we can decide who will be able to solve it. Then we select a suitable team of professionals. Our advantage is that we work between the faculties, and so we are able to set up a team from different departments across professions and faculties, and fit it to the needs of our client", says Burčík.

Communication is the key to ongoing success in terms of improving cooperation between universities and industry. If people know about each other's needs, they can react and suggest solutions and improvements. Inovacentrum started organizing round table discussions to promote conversation and contact building between industry representatives and researchers. Round tables are thematic discussions over a specific issue or problem, during which the participants try to draft possible ways to solve particular issues. Inovacentrum has already organized more than 10 discussions with more than 120 participants. But that is just the beginning.

In addition to research and development tasks, Inovacentrum offers a number of support services. For example, the public funding service includes searching for suitable grants that the client is eligible for, writing and submitting an application for public funding, and administering the funding that is received. Inovacentrum also searches actively for technologies that are ready to be offered for industrial development, and informs potential interested companies about their existence. Intellectual property protection is an important part of technology transfer, which is what we call the process of selling emerging technologies that has been briefly described here. Inovacentrum advises its clients about the best ways to protect their intellectual property, and organizes courses and seminars on relevant subjects. Inovacentrum is an exclusive Prometric testing center for the Czech Republic. Tests like TOEFL, EPSO and other tests proving the ability of the candidates to hold administrative positions in the EU and the U.S. are administered here. Last but not least, Inovacentrum runs a business incubator called InovaJET. This again fulfills the 3rd role of a modern university, which educates not only future employees but also individuals who will later themselves provide jobs for other people. ■

WHERE WE EAT, SLEEP AND LIVE

Any student of the Czech Technical University in Prague or any other university can apply for student accommodation and can take meals at the Service Facilities Administration of CTU. The Service Facilities Administration of the University offers students and self-payers accommodation in the dormitories it administers in Prague.
There are nine canteens where students and academic staff can take their lunch or dinner. Some of them also offer breakfast. Students and staff can also take a breake and eat in buffets, snack bars and other catering facilities in the dormitories and faculty buildings.
In most cases, meals can be paid for in cash, by employee cards, student ISIC cards, and with TICKET RESTAURANT, SODEXHO PASS and Chéque Dejeuner lunch vouchers. ■

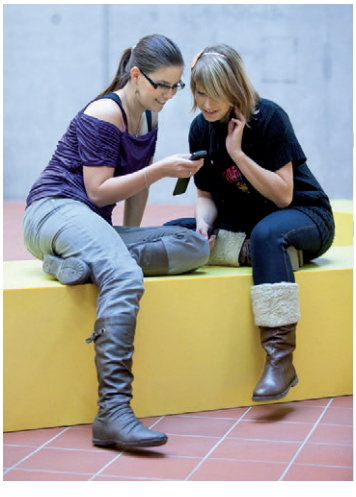



Accommodation, board	
Bed capacity of CTU in Prague dormitories	8 368
Number of applications for accommodation, as of 31/12/2012	9 317
Number of applications for accommodation accepted and administered, as of 31/12/2012	9 317
Number of bed/days in 2012	2 217 168
Number of main meals supplied to students in 2012	1 114 920
Number of main meals supplied to CTU staff in 2012	114 347
Number of main meals supplied in 2012 to other customers	492 298

The dormitories are located in the vicinity of the CTU campus in Dejvice (the Dejvická, Sinkuleho and Masarykova Dormitories), in Bubeneč, not far from Dejvice (the Bubeneč and Orlík Dormitories), at Strahov, in the Prague city centre (Hlávkova Dormitory), and in the picturesque Podolí district of Prague.

Multi-purpose sports facilities with artificial grass and evening lights can be used at the Strahov, Podolí and Bubeneč dormitories, mostly for ball games such as tennis, handball, volleyball, basketball and netball.

At the Strahov Dormitory, there is also an outdoor climbing wall: height 20 m, width 4.6 m, overhang 2.1 m, 6 basic routes, difficulty 5 to 7 degrees. ■



THE CTU ACADEMIC ORCHESTRA

The CTU Academic Orchestra is a unique musical ensemble in the Czech Republic that provides an opportunity for students from CTU, and also from other universities, to develop as musicians. The professional conductor is Jan Šrámek, who draws on long-term experience of working not only with professional musical ensembles but also as a director and in dramaturgy. The orchestra performs regularly in the Bethlehem Chapel, and also on stages elsewhere in the Czech Republic and abroad, with a classical and multi-genre repertoire. The orchestra enjoyed great success when it played a concert in Cambridge, where it presented a programme under the title Jewels of Czech Music. A number of renowned soloists have appeared with the orchestra. ■


Ant. Dvořák.
Serenáda d
Opus 44.

THE CENTRE FOR INFORMATION AND CONSULTATION SERVICES

The Centre provides support for CTU students and staff in dealing with study, personal, family and legal problems, and also organizes personal development events and activities for students. The Centre offers activities provided by staff members with relevant education and experience:

- expert consultancies for individual help (study counselling, psychological counselling, social and legal counselling, and spiritual counselling)
- immediate help in crisis situations
- an information service – comprehensive information about studies and events at CTU (e.g. help in selecting a faculty or a study programme)
- seminars, workshops, discussions aimed at personal development, support for creativity and for study skills
- studenti sobě – "Students for Themselves" – an opportunity for students to organize events for themselves and for their colleagues in the Centre's multifunctional room
- free access to computers with internet, wifi
- the Tina printing system – a self-service system for copying and printing

In 2012, the counselling staff provided a total of 10 816 consultancies and contacts, 8 216 of them personally, 1 521 by telephone, and 1 079 via e-mail. ■

THE ELSA CENTRE

The ELSA Centre helps students with special needs (people with a disability, dyslexia, dysgraphia, etc.). ELSA is a workplace attached to the department of studies and student affairs at the rectorate of CTU in Prague.

In support of students with special needs, ELSA provides services to ensure that they can benefit fully from their studies.

The digitizing and library service provides access to study literature, including adapting specialized symbols and transforming materials to a tactile form.

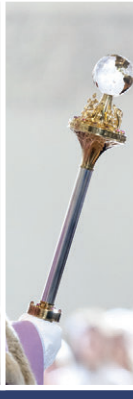
For students with hearing difficulties, there is a visualizing and transcribing service and also an interpreting service.

The assistance offered by ELSA covers assistance with studies, personal assistance and spatial orientation training.

Through the organisational and methodological service, students receive training in study and work strategies (if these need to be supplemented), as well as individual tuition when needed.

The technical service provides access for students to technical equipment in accordance with their type of disability, including the opportunity to loan certain equipment.

An integral part of the services that are provided is sufficient advice and help to ensure that students make effective use of the ELSA services and understand what ELSA can offer in the context of their studies. ■



CTU CAREER CENTRE

The Career Centre offers its services free of charge to students of CTU and to the university's recent graduates, for three years after they finish their study programmes. The Centre offers advice on careers, personality testing, seminars on soft skills and management skills, mentoring and competitions. The Centre mediates offers of job opportunities, trainee programmes, and topics for bachelor and master projects.

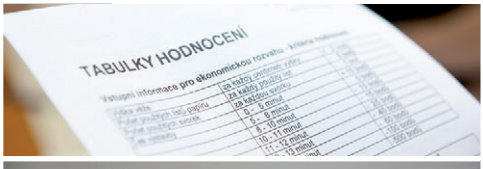
The aim of the Career Centre is to improve students' orientation in the employment market, and to help them to find suitable and fulfilling employment opportunities.

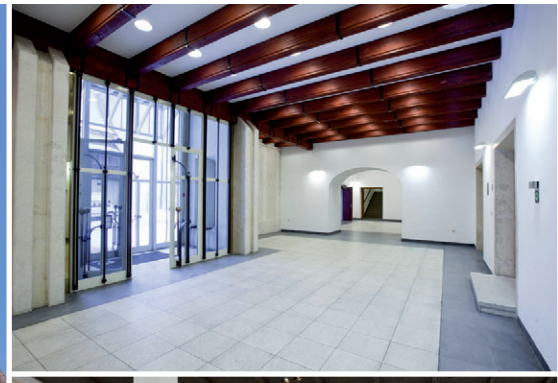
We collaborate with companies such as Hewlett-Packard, McKinsey, Škoda Auto, Linet, Skanska, Tesco, and many others. Our seminars are led by experienced specialists who also work as seminar leaders for international companies. ■

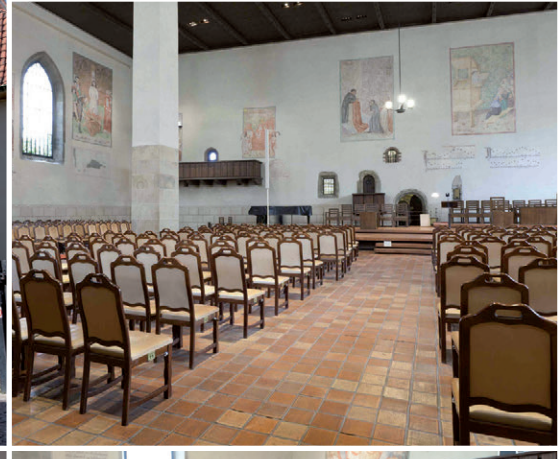
ALUMNI

The Association of Graduates and Friends of CTU was set up to establish links with graduates of the biggest and oldest technical university in the Czech Republic who completed their study programmes years ago. Through this Association, however, CTU is also interested in keeping in contact with people who have have recently graduated or who are still students.

Graduates and other members of the Association regularly receive information about what is happening at their alma mater, and can take part in special events (concerts, balls, courses, lectures, etc.) organised at CTU. They can also participate in regular meetings that the Association organizes. The members of the Association include not only CTU graduates, but also some students and member of the staff of the University.







THE BETHLEHEM CHAPEL

The Bethlehem Chapel is a national cultural monument and the first preacher's temple in Europe. It was founded by burghers Jan Kříž, a grocer, and Hanuš of Mühlheim, a courtier. In the foundation deed dated 24 May 1391, both donors expressly said that it was to be used for sermons in Czech language. It was built between 1391 and 1394, and between 1402 and 1413 it was used by Master Jan Hus. Since the very beginning it has been associated with a university.

The interest of burghers in reforming the church and progressive university trends met in the Bethlehem Chapel. Between 1638 and 1661, the chapel was owned by the university in Prague.
In 1786, a portion of the chapel was torn down, but in the 1950s it was restored to its original appearance based on a project by architect Fragner, who used masonry fragments that had been preserved.
In 1987, the chapel passed to the Czech Technical University in Prague, which restored it and reopened it to the public at the university's expenses. The opening ceremony was held on 26 March 1992. Following university traditions, the Bethlehem Chapel became the ceremonial hall of the Czech Technical University.

Ceremonial Hall
The ceremonial hall is used for ceremonies, social and academic events such as graduation ceremonies, matriculation ceremonies and academic council meetings. It is also used for international conferences, congresses, concerts, literature evenings, etc.
The chapel is also used by the Office of the Czech Government for state events.
There is seating for 400 in the auditorium.
The hall has a manual organ. ■

THE LION CUBS KINDERGARTEN HELPS MOTHERS TO RETURN TO RESEARCH AND STUDIES

CTU tries to help university staff to resume working after maternity leave and to help students to complete their study programmes after starting a family before graduating. For this purpose, the University opened its own kindergarten in 2010.

The university Lion Cubs kindergarten is the first institution of its type in the Czech Republic. It is listed in the register of schools and educational establishments of the Ministry of Education, Youth and Sports, and provides education as a state kindergarten organized by CTU in Prague. Other universities in the country have been showing interest in this innovation, and some have very recently opened their own kindergartens. For the future of CTU, this service offers an advantage over other universities.

The University Lion Cubs kindergarten offers education for children according their individual abilities. In addition to normal pre-school activities, the kindergarten offers the Healthy Alphabet programme. Children are stimulated to develop their reasoning abilities through educational games, and gain much knowledge about the world around us. They can join a number of circles (for English language, art, music, etc.) The uniqueness and the usefulness of linking a kindergarten with a technical university has been shown from the beginning, not just through the main aim, which is to provide good care for the children and enable their parents to return to their work and studies at CTU, but also through collaboration on projects, dissertations and other papers and articles written by academic workers and students. The children get to look into the mysteries of technology through a wide range of activities. One project aims to introduce them to new sources of energy. In the garden, the children have a panel with three pairs of light-emitting

diodes placed in the eyes of the lion cubs, in the logo of the kindergarten. These can be lit up using three energy sources, which are conceived as a stand where children can play. Opening and closing the solar cell provides an example of energy directly from solar radiation. Energy from a water column is demonstrated by an apparatus where water is poured in and turns a wheel, and the children themselves can provide the energy for a dynamo to turn the model.

A further example of collaboration between the kindergarten and science at the University was the children's participation in the doctoral project of a PhD student from the Faculty of Architecture on pre-school age children's perception of public spaces. Child-friendly Cities is a study aimed at designing and planning public city spaces for children, and brings children right inside the planning process. Research with children at the Lion Cubs kindergarten compared two different city spaces, i.e. children's playgrounds (or places specifically intended for children) and other public city spaces, e.g. squares, parks and streets. The aim was to investigate children's play, how children play in different types of city spaces, and their perceptions and preferences. The children visited eight different places in Prague with the young architect: three children's playgrounds, three public city spaces, and two other city spaces. The children were given cameras, with which they recorded their impresssions, and they also spoke about their perceptions of public spaces.

"We are open to further collaboration with students and with university researchers. For example, a student from the Faculty of Civil Engineering recently asked if she could work on part of her master's project with us. We are always happy to find out something new. Our children really like technology. They take it in from their parents from birth. By the age of three they are able to explain the principle of hydraulic cutters, combustion engines and building materials," says Martina Hovorková, director of the University Lion Cubs kindergarten. ■

FORMULA STUDENT

CTU CarTech is a student project at the Czech Technical University in Prague that receives support from many companies in the Czech Republic and abroad. The aim of the project is to take part in the prestigious Formula Student/SAE international engineering competition, in which students from more than 470 universities all over the world participate. Our team contends for top results.

Our first car was manufactured in 2009. Now, the CTU CarTech team has its 4th combustion engine car. After the 2012 season the team held 21st position in the Formula Student/SAE world rankings out of more than 500 teams. In 2013, the team achieved 11th position on the highest valued competition in Hockenheim, Germany, and 2nd position in the first ever Formula Student Czech Republic.
The electric division of the team was founded in 2011. The electric engine car currently occupies 14th position out of 63 teams. Working in the CTU CarTech team gives students a great opportunity to gain a lot of experience and qualifications. Working in a team is very motivating, and there is always plenty of fun. Even dissertations and construction projects flow into the development of our car. CTU CarTech provides a great opportunity for the future generation of engineers. ■

Design it, build it, race it! Students design the whole car, manufacture most of its parts at CTU and finally they compete with other universities on famous race tracks across Europe. All in one year!


VIZOR 3000