

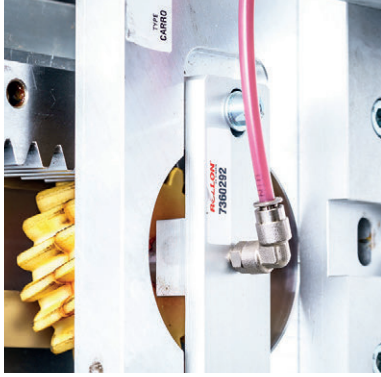


CTU

**CZECH TECHNICAL
UNIVERSITY
IN PRAGUE**

CZECH TECHNICAL UNIVERSITY IN PRAGUE





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MESSAGE FROM THE RECTOR

Dear reader,

It is my great pleasure to present to you the Czech Technical University in Prague, the oldest technical university in the Czech Republic. Above all, our University forms the cornerstone of the Czech system for science & research. Our students have an opportunity to work in top research projects in collaboration with international teams, and to work closely with the university's industrial partners. The Faculties and Institutes of our University cover a broad spectrum of knowledge and capabilities, ranging from nuclear research to architecture, from artificial intelligence to healthcare, and from civil engineering to mechanical engineering.

We offer educational and research capabilities in a very broad range of technical sciences, and we can satisfy almost every industrial demand for research or innovation. The Czech Technical University is undeniably a leader in innovation, technological development and science, as confirmed by our efforts and results in the COVID-19 pandemic. We will be pleased if the information presented in this booklet is of interest to you.

A handwritten signature in blue ink, consisting of a stylized first name and a more complex surname.

doc. RNDr. Vojtěch Petráček, CSc.

Rector / Czech Technical University in Prague

CTU IN NUMBERS

- **17,229** students
- **3,825** foreign students in accredited study programmes: 2,043 in bachelor programmes, 827 in master's programmes, 242 in PhD programmes, 713 visiting students
- **542** outgoing exchange students and **1,132** incoming exchange students
- **188** accredited study programmes delivered in Czech language, and 44 programmes delivered in a foreign language
- **21** Joint/Double/Multiple Degree study programmes in collaboration with universities abroad
- **370** lifelong learning courses
- **1,591** academic staff, including 205 professors
- **1,787** non-academic staff

The proportion of funds invested in science and research obtained from public sources (in 2019): **62 %**

Number of publications in WoS (in 2019): **2,266**

CTU in Prague currently occupies the following positions in the QS World University Rankings, which rated 1,604 universities in the whole world. CTU is ranked in 432nd position in the QS World University Rankings, and in 9th position in the Emerging Europe and Central Asia regional rankings. In Engineering – Civil and Structural, CTU occupies 151st–200th position; in Engineering – Mechanical, 201st–250th position; in Engineering – Electrical. 201st–250th position; in Physics and Astronomy, 201st–250th position; in Natural Sciences, 271st position; in Computer Science and Information Systems, 251st–300th position; in Material Science, 251st–300th position; in Mathematics, 351st–400th position; and in Engineering and Technology CTU occupies 255th position.

SYSTEM AND ORGANISATION OF STUDIES

CTU offers accredited bachelor, master and doctoral study programmes. Each faculty, and also MIAS School of Business, offers and administers a range of its own programmes. Teaching period: The Winter semester usually starts at the end of September. The Summer semester starts in mid February and ends at the end of May.

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. 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.

Lifelong learning

Each university faculty and institute organizes a very wide range of courses and events aimed at expanding the horizons of its staff and students, its partners and the general public – specifically including children and senior citizens.

CONTACT

Head of Department for Education and Students Affairs Rectorate of CTU

Ing. Dana Dubnová

+420 224 353 469

Dana.Dubnova@cvut.cz

INTERNATIONAL STUDENTS

Internationalization of the academic and student environment is one of the long-term aims in the strategy of CTU. This shows up in the numbers of foreign students who come to the university. These numbers consist of Erasmus&Exchange students and degree-seeking students. The table shows the countries that the greatest numbers of students come from (as of 31. 10. 2019).

Slovakia	1,082	France	132
Russia	799	China	118
Ukraine	399	Belarus	94
Kazakhstan	257	Spain	66
India	152	Turkey	66

The numbers are influenced by the following factors:

- Many students from Slovakia, Russia, Ukraine, Kazakhstan and Belarus take advantage of the opportunity to study in Czech language. They pay no tuition fee, provided that they demonstrate sufficient proficiency in Czech language
- The cost of living and the fees for studying in programmes delivered in English language are much lower than in the West
- Prague regularly appears high in the rankings of the best student cities in the world
- Improved positions in the international rankings of top universities

Main international academic partners:

Europe: RWTH Aachen, TU München, TU Dresden, STU Bratislava, Supélec Paris, Écoles Centrales de Nantes, de Marseille, de Lille, de Lyon, Politecnico di Milano, École polytechnique fédérale de Lausanne, TU Delft, TU Leuven, UPM Madrid, KTH Stockholm, Aalto University Helsinki, University of Strathclyde, Glasgow, TPU Tomsk

Overseas: Nanyang Technological University, Kansas State University, University of Texas at El Paso, Purdue University,

Université Polytechnique de Montréal, Tecnológico de Monterrey, Mexico, Kanazawa University, Indian Institute of Technology Chennai, RMIT Melbourne, Queensland University of Technology, Stellenbosch University, South Africa, KAIST, South Korea, Bandung Institute of Technology

The Study in Prague project

Study in Prague, a key development project since 2014, promotes the Prague-based public universities and their study programmes taught in foreign languages (mainly English). Seven universities, each with a different study and research orientation, are brought together in this initiative. The joint goal of each of the universities is to recruit students from abroad, who can study in a wide range of bachelor, master's and PhD programmes. The project also promotes the science and research carried out at each institution. Students choose from among a very broad range of study programmes, from medicine, engineering, economics, social sciences, chemistry, natural sciences, through to performance art in the fields of music, dance and theatre, the social sciences and other fields of study in the humanities. The main reasons given for studying in Prague are the lower living costs and tuition fees than in other countries, in combination with high-quality tuition and research, and a good position in the employment market after graduation.

www.studyinprague.cz

**Further information about studying
at CTU in Prague:**

www.studyatctu.com



Study in Prague

CONTACT

**Head of Department of International Affairs
Rectorate of CTU**

Ing. Volfgang Melecký, Ph.D.

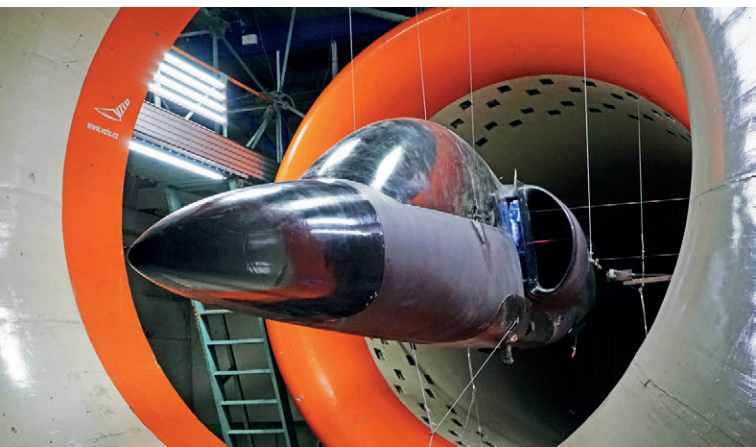
+420 224 353 465

Volfgang.Melecky@cvut.cz

SCIENCE AND RESEARCH

Czech Technical University in Prague (CTU) is one of the largest research institutions in Central Europe, located at the heart of the Prague academic/research cluster. Besides traditional engineering education at undergraduate, graduate and doctoral level, CTU prioritizes a long-term and pivotal role for basic and applied research. Research is carried out at all eight faculties of the university (a faculty being the main academic organizational unit of the university), and also at the university institutes.

Czech Technical University in Prague (CTU) covers the traditional and perspective engineering subjects, including mechanical engineering, civil engineering, architecture and urban development, electrical engineering, nuclear engineering, transportation engineering, IT, biomedical engineering, natural sciences, mathematics, physics with maximum expertise and subsequent innovation activities. Within each of these "traditional" engineering branches there are top-level advanced research departments involved in cutting-edge research in topics like cybernetics, IT, artificial intelligence, advanced engineering materials, air-space technologies, smart cities and technologies, low-energy buildings, smart medical-engineering equipment, etc.



INTERNATIONAL COOPERATION FOR THE ADVANCEMENT OF RESEARCH AND INNOVATION

Major research results cannot be achieved without wide-ranging and intensive international collaboration. Accordingly, CTU participates in many international research consortia, for instance CERN, Fermilab, JINR, ITER, ESA, BNL and many more. CTU is involved in large research programmes funded by EU like Horizon 2020. Currently CTU research teams participate in more than 80 H2020 research projects. CTU is particularly proud to host the following prestigious ERC research projects funded by ERC grants of the EU:

PROJECTS OF EUROPEAN RESEARCH COUNCIL (ERC)

AI4REASON: Artificial Intelligence for Large-Scale Computer-Assisted Reasoning

This prestigious ERC Consolidator Grant No. 649043 was financed by the European Union through the European Research Council (ERC) Horizon 2020 Programme for the period of 9/2015 – 8/2020 with a budget of 1.5 million EUR. The purpose of the AI4Reason project was to develop automated methods for performing computer reasoning and proving theorems, using extensive formal theories and knowledge bases. These methods are necessary to perform computer verifications of large mathematical theories, software and hardware, and other advanced knowledge-based systems and technologies. Principal investigator: Dr. Josef Urban, CTU – Czech Institute of Informatics, Robotics and Cybernetics.

Web link: <http://ai4reason.org/>

ELE: Evolving Language Ecosystems

This prestigious ERC Advanced Grant No. 695412 is financed by the European Union through the European Research Council (ERC) Horizon 2020 Programme for the period of 10/2016 – 9/2021 with a budget of 3.2 million EUR. A computer language is more than the

code that programmers write or compilers translate into machine instructions. Modern languages are characterized by rich ecosystems that include compilers, interpreters, IDEs, libraries, help pages, manuals and discussion forums. To remain relevant, languages need to evolve, they must be augmented with new features, their libraries must adapt to new end-user requirements, and implementations must change to meet new performance goals. How can this be achieved without disrupting the entire ecosystem? The ELE project explores the fundamental techniques and algorithms for evolving entire language ecosystems. The purpose is to reduce the cost of wide-ranging changes to programming languages and obviate the need for devising entirely new languages. Principal investigator: prof. Jan Vitek, CTU – Faculty of Information Technology.

Web link: <https://ele-prl-prg.github.io/>

Association of European Technical Universities

CTU has been a partner in the project “**EuroTeQ Engineering University**”, a consortium of 6 European universities, since November 1, 2020. The aim of the three-year project is to implement the visions “European Universities Initiative” and “European Education Area” in the environment of leading technical universities with financial support from the European Commission Erasmus + program A.1 – European Higher Education.

The project coordinator is the Technical University of Munich TUM (DE) and the partners are the Technical University of Denmark DTU (DK), the Technical University of Eindhoven TU / e (NL), Ecole Polytechnique I’X (FR), the Czech Technical University in Prague and Tallinn University of Technology TalTech (EST). The consortium of the EuroTeQ project was established on the basis of long-term cooperation between the EuroTech Universities Alliance, the Czech Technical University in Prague and Taltech. EuroTech also includes the École Polytechnique Fédérale de Lausanne (EPFL) and the Technion Israel Institute of Technology, which joined the project without financial participation.



Other examples of international cooperation

High level research quality and performance cannot be achieved without intensive inter-university collaboration. For this reason, there are many international and national university associations that provide the proper collaboration platforms and support backgrounds for achieving the best research performance and educational quality. CTU is a member of CELSA, T.I.M.E., CESAER, SEFI and other associations. Further information can be obtained from the relevant association:

CELSA – <https://celsalliance.eu/>

T.I.M.E. – <https://timeassociation.org/mission/>

CESAER – <https://www.cesaer.org/about/history/>

SEFI – <https://www.sefi.be/>

Examples of further international research associations and organizations where CTU is very active in various forms:

ELIXIR Europe – <https://www.elixir-czech.cz/about-elixir-cz/organisation-structure>

Confederation of Laboratories for Artificial Intelligence Research in Europe (**CLAIRE**) – <https://claire-ai.org/offices/#CZ>

European Laboratory for Learning and Intelligent Systems (**ELLIS**) – <https://ellis.eu/>, <https://www.ciirc.cvut.cz/ellis-inaugurates-30-research-units-at-leading-institutions-across-europe-including-ellis-unit-prague-located-at-ciirc-ctu/>

CERN (experimental collaboration) ALICE – <http://aliceinfo.cern.ch/Public/en/Chapter3/Chap3Collaboration-en.html> and ATLAS – <https://atlas.cern/discover/collaboration>

QuantERA ERA-NET Cofund in Quantum Technologies – <https://www.quantera.eu/>

European Chemical Society (**EuChemS**) – <https://www.euchems.eu/>

European Institute of Innovation and Technology (**EIT**), Urban Mobility – <https://www.eiturbanmobility.eu/>

World Road Association (**PIARC**) – <https://www.piarc.org/en/>

European Alliance of Medical and Biological Engineering and Science (**EAMBES**) – <https://eambes.org/>

European Academy of Optometry and Optics (**EAOO**) – <https://eao.info/>

European Institute of Innovation & Technology (**EIT**) – EIT Manufacturing

Institute of Electrical and Electronics Engineers (**IEEE**) – <https://www.ieee.org/> <https://www.ieee.cz/>

International Association for Bridge and Structural Engineering (**IABSE**) – <https://iabse.org/>

European Construction Technology Platform (**ECTP**) – <http://www.ectp.org/>

Astroparticle Physics European Consortium (**APPEC**)

International Astronautical Federation (**IAF**)

International Energy Agency (**EA-EBC**), Annex 83, Annex 72

HR AWARD

In 2017, the Czech Technical University in Prague (CTU) endorsed the principles enshrined in **The European Charter for Researchers** and the Code of Conduct for the Recruitment of Researchers. On September 10, 2019, CTU received the **HR Excellence in Research Award** from the European Commission, and an initial implementation phase of two years is in progress. The HR Award is awarded by the European Commission to research institutions that implement a personnel strategy based on the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. This is a recommendation of the European Commission that obliges research institutions to create welcoming working conditions, professional development opportunities and transparent recruitment procedures.

CONTACT

Head of Department of the Science and Research Rectorate of CTU

Ing. Karel Žebrakovský

+420 224 353 463

karel.zebrakovsky@cvut.cz



FACULTY OF CIVIL ENGINEERING

Number of students: 2,080 BSc | 978 MSc | 415 PhD



The Faculty of Civil Engineering, whose history started more than 300 years ago, offers a number of Bachelor's, Master's and doctoral degree study programmes in the field of civil engineering, architecture and surveying. Some of them are taught by consortia associating major European universities. We are doing our best to ensure that

the Faculty name guarantees high-quality education for the future. In addition to the education of future experts, and also thanks to the engagement of numerous creative personalities, the Faculty conducts cutting edge research in many areas, further links it to practice and thus contributes to the implementation of modern technology solutions. I appreciate the fact that the Faculty has partners among leading construction companies which offer our students lots of opportunities for further development. The students and graduates of our Faculty highly value the combination of solid professional knowledge and creative abilities with good prospects of interesting and high-quality jobs.

prof. Ing. Jiří Máca, CSc., dean

OUTSTANDING STUDENT



In 2015, the Ph.D. student **Alžběta Vachelová** launched the project "Enter Someone's Life" at the Faculty, in which university students register in the Czech National Register as bone marrow donors. Several times, she has organized recruitment not only at CTU, but has also involved seven other universities in the Czech Republic in the project. Thanks to her initiative, almost 3,000 new donors have been added



to the registers. For this activity she won the Ministry of Education, Youth and Sports award for an extraordinary student deed, she won the Woman of the Region competition for the Pilsen District and was nominated for the Via Bona award in the Young Personal Engagement category. Alžběta Vachelová is currently studying in a doctoral degree programme at the Department of Architecture.

STUDY PROGRAMMES IN ENGLISH

Bachelor's Degree Programme

- Civil Engineering

Master's Degree Programme

- Civil Engineering
- Water and Environmental Engineering
- Buildings and Environment (selected courses)

Doctoral Degree Programme

- Physical and Materials Engineering
- Structural and Transportation Engineering
- Construction Management and Engineering
- Geodesy and Cartography
- Environmental Engineering
- Mathematics in Civil Engineering
- Building Engineering
- Water Management and Water Engineering
- Integral Safety
- Architecture and Sustainable Development
- Acoustics (with Faculty of Electrical Engineering CTU)

The Faculty has a number of unique workplaces, 24 departments and 3 research centres. They include, e.g., the Experimental Centre, the Water Management Laboratory or the Europe-wide unique research facility, the Josef Underground Laboratory. Both the employees and the students are successfully involved in numerous domestic and international research projects in fundamental, as well as applied research. Many achievements are most prestigious and the Faculty results, mainly in the field of civil engineering, are of international renown (Evaluation of Research Organizations, Research, Development, Innovation Council).

CONTACTS

Secretariat:

Martina Vavřinová

+420 224 358 776

martina.vavrinova@fsv.cvut.cz

Department of International Relations:

Věra Klátová

+420 2243 57 940

vera.klatova@fsv.cvut.cz

Department of Science and Research:

Veronika Kabilková

+420 224 358 739

veronika.kabilkova@fsv.cvut.cz

www.fsv.cvut.cz

FACULTY OF MECHANICAL ENGINEERING

Number of students: 2,814 BSc | 883 MSc | 372 PhD

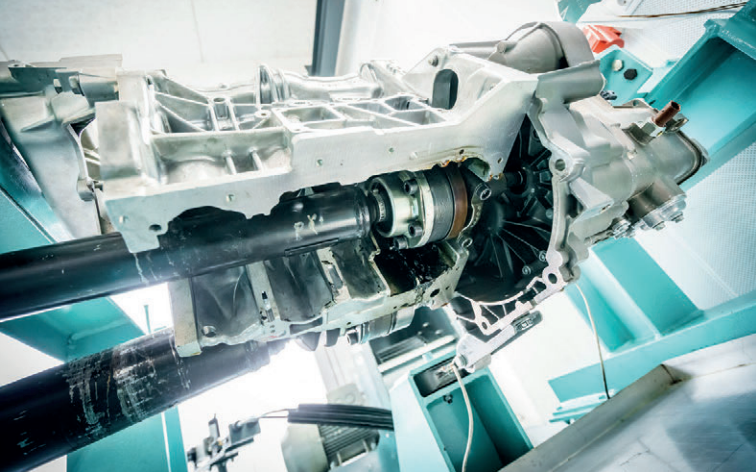


Mechanical engineering is a promising field with a global future. Graduates of our Faculty can find jobs in many spheres. The Faculty offers a broad range of fields of study, and graduates can find jobs not only in enterprises producing machinery, but also in companies engaged in automation, informatics, environmental engineering, power engineering, biomedical and rehabilitation engineering, and transportation engineering. They can also work in finance departments and in enterprise management.

prof. Ing. Michael Valášek, DrSc., dean

FACTS ABOUT THE FACULTY OF MECHANICAL ENGINEERING (FME)

FME, the oldest mechanical engineering faculty in the Czech Republic, is a constituent of the Czech Technical University in Prague (CTU). The Faculty is a direct descendant of the Engineering School in Prague, the first of its type in Central Europe, established in 1707. CTU in Prague was ranked number one among technical universities in the Czech Republic in the QS World University Rankings, one of the most trusted university rankings in the world.



PARTNERS AND INDUSTRIAL COOPERATION

The partners of the Faculty include GE Aviation Czech, ŠKODA AUTO, Porsche, Honeywell and Bosch. This collaboration enables students in project-oriented education to participate in real industrial projects.

STUDY PROGRAMMES IN ENGLISH

Bachelor's Degree Programme

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

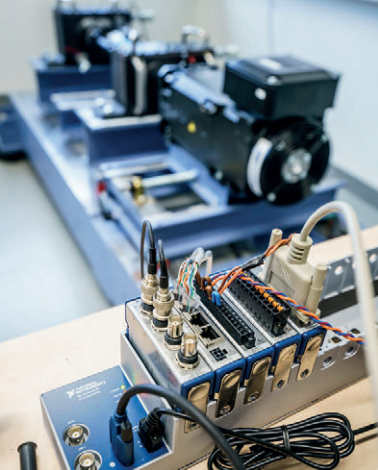
Master's Degree Programme

- Mechanical Engineering
- Intelligent Buildings
- Nuclear Power Engineering Equipment
- Master of Automotive Engineering (MAE)
- Aeronautics and Astronautics

Doctoral Degree Programme

- Mechanical Engineering

Information on tuition fee arrangements is published in Appendix No. 5 of the CTU Statute. For second year students in the MAE double degree programme there is a special fee according to the partner university at which they study.



CONTACTS

Secretariat:

Božena Talácková
+420 224 352 885
dekan@fs.cvut.cz

Department of Public Relations and Cooperation with Industry:

doc. Ing. Jan Halama, Ph.D.
+420 224 357 549
Jan.Halama@fs.cvut.cz

Information on Studies Bachelor and Master Study Programmes:

Simona Jordáková
+420 224 352 656
Simona.Jordakova@fs.cvut.cz

Doctoral Study Programmes:

Mgr. Sylva Ondřejíčková, Th.D.
+420 224 355 042
12921@fs.cvut.cz

www.fs.cvut.cz

FACULTY OF ELECTRICAL ENGINEERING

Number of students: 1,816 BSc | 826 MSc | 350 PhD



The Faculty's study programmes are closely linked to its research activities. The Faculty ranks among the top five research institutions in the whole Czech Republic. It has extensive research collaboration with top universities and research institutions worldwide. The Faculty offers innovative solutions to its industrial partners and public institutions. It participates in space research programmes and works for governmental agencies. In the future, the Faculty will strive to be a leading center of research and innovation with an even more internationalized academic staff and student body.

prof. Mgr. Petr Páta, Ph.D., dean

OUTSTANDING TEAM

Drones and robots programmed by a team at the Faculty of Electrical Engineering won the Mohamed Bin Zayed International Robotics Challenge in Abu Dhabi in 2020 and took first place among the unsponsored teams in the DARPA Subterranean Challenge Urban Circuit.

STUDY PROGRAMMES IN ENGLISH

Bachelor's Degree Programme

— Electrical Engineering and Computer Science

Master's Degree Programme

- Aerospace Engineering
- Biomedical Engineering and Informatics
- Cybernetics and Robotics
- Electrical Engineering, Power Engineering and Management



- Electronics and Communications
- Open Informatics

Doctoral Degree Programme

- Electrical Engineering and Information Technology

TOP RESEARCH

Centre of Advanced Photovoltaics (cap.fel.cvut.cz), led by Prof. Tomáš Markvart. Research Center of Informatics (rci.cvut.cz), led by Prof. Michal Pěchouček. Our most productive research groups are: Quantum Structures (J. Hamhalter), Discharges and Plasma (P. Kubeš), Advanced Materials (T. Polcar), Antennas (M. Mazánek), Microwave (K. Hoffmann), Computational Electromagnetics (L. Jelínek), 5G Mobile Communications (Z. Bečvář), Wireless and Fiber Optics (S. Zvánovec), Sensors and Magnetics (P. Ripka), Signal Analysis (R. Čmejla), Control Theory (M. Šebek), Computer Vision (J. Matas), Computer Graphics (J. Žára), Robotics (T. Svoboda), Artificial Intelligence (M. Pěchouček), Machine Learning (M. Navara), Bioinformatics (F. Železný), and Economics of Renewable Resources (J. Knápek).

INDUSTRIAL COOPERATION

The Toyota Research Lab was opened in 2018, and is a part of a network linking the University of Cambridge, ETH Zürich, KU Leuven, and the Max-Planck Institute for

Informatics in Saarbrücken. The lab is led by Prof. Jiří Matas, who has cooperated with Toyota in computer vision since 2003. Our other industrial clients include Valeo, ABB, Siemens, Red Hat, Samsung, ŠKODA AUTO, Adobe, Cisco, Honeywell, Texas Instruments, Disney and ST Microelectronics.

CONTACTS

Dean's Office:

Ing. Radka Šmajsová

+420 224 352 016

sekretariat@fel.cvut.cz

Public Relations:

Ing. Mgr. Radovan Suk

+420 224 353 931

pr@fel.cvut.cz

International Office:

Otakar Vlček

+420 224 352 360

international@fel.cvut.cz

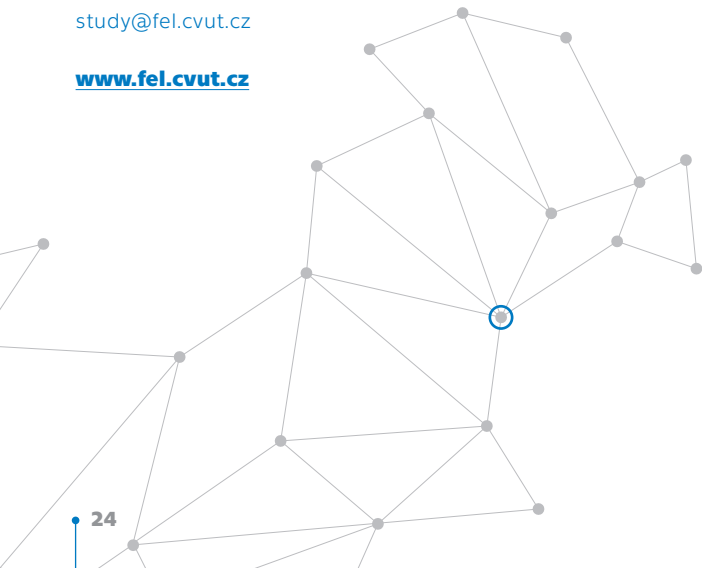
Study Office:

Ivana Býmová

+420 224 352 106

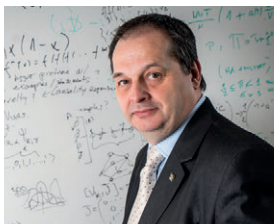
study@fel.cvut.cz

www.fel.cvut.cz



FACULTY OF NUCLEAR SCIENCES AND PHYSICAL ENGINEERING

Number of students: 685 BSc | 210 MSc | 300 PhD



Our mission is to prepare top experts in all fields of science, in particular mathematics, physics, nuclear chemistry and information technology. The teaching is highly individualized, tailored to the needs of each student.

The focus is on independent and creative thinking. The high standards promoted by the Faculty have been confirmed by the awards that our graduates and staff have received. Large national grants awarded in recent years have enabled the Faculty to pursue the latest trends in science, technology and teaching.

prof. Ing. Igor Jex, DrSc., dean

OUTSTANDING STUDENT



In her doctoral studies, **Dagmar Bendová** is working on a theoretical investigation of the structure of particles in the microworld. She also teaches: she leads exercises in Subatomic Physics, and she gives classes in Physical

Measurements. In the summer of 2018, she took part in the Summer Student programme at CERN, where she worked within the framework of the LHCb experiment. During her studies, she has also involved herself in popularizing physics among middle school students and in activities within the Prague EPS Young Minds project.

STUDY PROGRAMMES IN ENGLISH

Bachelor's Degree Programme

- Applied Algebra and Analysis
- Applied Informatics
- Applied Mathematical Stochastic Methods
- Decommissioning of Nuclear Facilities
- Mathematical Engineering
- Nuclear and Particle Physics
- Nuclear Chemistry
- Physical Engineering
- Quantum Technologies
- Radiological Technology

Master's Degree Programme

- Applied Algebra and Analysis
- Applied Mathematical Stochastic Methods
- Mathematical Physics
- Mathematical Informatics
- Mathematical Engineering
- Plasma Physics and Thermonuclear Fusion
- Solid State Engineering
- Physical Engineering of Materials
- Physical Electronics
- Quantum Technologies
- Decommissioning of Nuclear Facilities
- Nuclear and Particle Physics
- Nuclear Engineering
- Radiological Physics
- Nuclear Chemistry

Doctoral Degree Programme

- Applied Informatics
- Doctoral Study Programme Mathematical Engineering
- High Temperature Plasma Physics and Thermonuclear Fusion (Joint doctoral programme in agreement with the Ghent University)
- Nuclear Engineering
- Nuclear Chemistry
- Nuclear Safety, Security and Forensics
- Physical Engineering
- Quantum Technologies
- Radiological Physics

UNIQUE FACILITIES

We are the only faculty in Europe that operates both types of nuclear reactors for education and research – the VR-1 Sparrow nuclear fission reactor, and the Golem nuclear fusion reactor. We have developed new devices, including the JetDep100 Ionized Jet Deposition (IJD) system, laser systems for medical applications, technologies for the detection of ionizing radiation, optical pulses, and very accurate measurements of time, the applications of which in space science are also under development.

INDUSTRIAL COOPERATION

Our Faculty cooperates with more than 40 commercial subjects in pure and applied research (e.g. Aero; ČEZ; ČZ; GE Aviation; Honeywell; Nuvia; Škoda JS). This cooperation has led to a considerable number of products and new processes that significantly improve our everyday life.

CONTACTS

Secretariat:

Ing. Dagmar Hodková
+420 224 358 274
dagmar.hodkova@fjfi.cvut.cz

Public Relations:

Ing. Šárka Salačová
+420 721 821 473
sarka.salacova@fjfi.cvut.cz

Doctoral studies:

Monika Zábranská
monika.zabranska@fjfi.cvut.cz

Department of Student Affairs:

Lucie Novotná
+420 224 358 284
lucie.novotna@fjfi.cvut.cz

www.fjfi.cvut.cz

FACULTY OF ARCHITECTURE

Number of students: 999 BSc | 597 MSc | 148 PhD



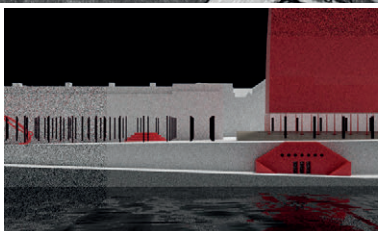
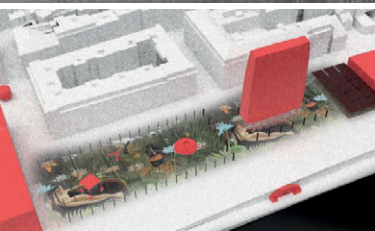
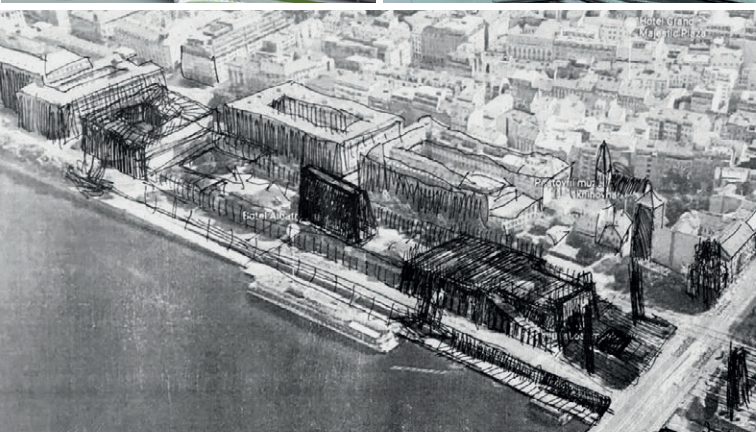
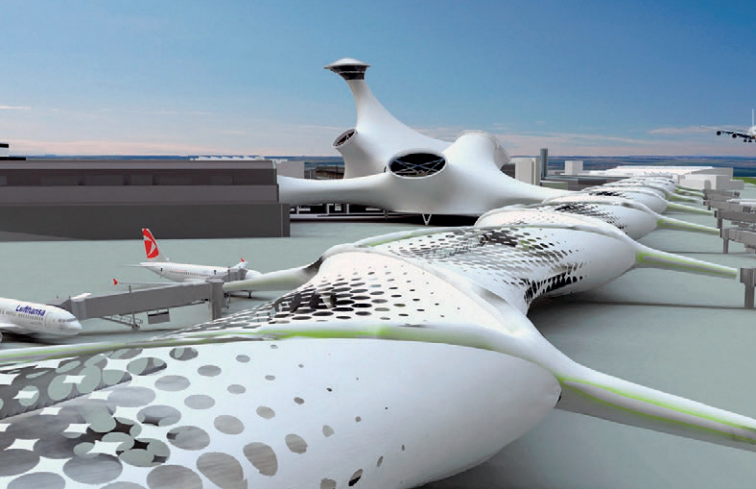
Over time, the Faculty of Architecture has become a prestigious place for studying and also for carrying out creative and publishing activities in architecture, urbanism, design and, more recently,

landscape architecture. The traditional position and the current status of FA CTU, the traditional local prestige and the growing international prestige of our results have formed stable foundations for further development of the Faculty, though it is also necessary to keep responding to new impulses given by the times. In upcoming years, it will be necessary to keep integrating into education – the fundamental changes in the profession of an architect – modern technologies that are being introduced in the preparation and realization of construction and building manufacturing, management of buildings in the tendencies of Industry 4.0, and methods of sustainable development. The Faculty must also go with the increasing impact of globalization and internalization on education and on the work of architects.

prof. Ing. arch. Ladislav Lábus, Hon. FAIA, dean

OUTSTANDING STUDENTS

Ondřej Pokoj became the winner of the Kaplický Internship architectural competition, which is announced by the Bakala Foundation. The jury was interested in his project called Transferia – a transfer hub for Václav Havel Prague Airport. For his victory, he received an internship at the prestigious London architectural studio Heatherwick, where he was subsequently offered a permanent collaboration.



Vojtěch Rudorfer won 1st place in an architectural competition for students called Unique Building in a Complicated Place, announced by the Central Group. The jury appreciated his project of the now neglected Nábřeží Lannova in Prague 1, in which he placed buildings of national importance and a park.

STUDY PROGRAMMES IN ENGLISH

Master's Degree Programme

- Architecture and Urbanism
- Design
- Landscape Architecture

Doctoral Degree Programme

- Architecture and Urbanism
- Design

CONTACTS

Dean's office:

Olga Mlýnková
+420 224 356 242
olga.mlynkova@fa.cvut.cz

Public Relations:

Ing. arch. Jan Jakub Tesař, Ph.D.
+420 224 356 383
pr@fa.cvut.cz

International Department:

doc. Ing. arch. Irena Fialová
+420 224 356 330
irena.fialova@fa.cvut.cz

Study Department:

Kristýna Sedlaříková
+420 224 356 224
kristyna.sedlarikova@fa.cvut.cz

www.fa.cvut.cz

FACULTY OF TRANSPORTATION SCIENCES

Number of students: 835 BSc | 230 MSc | 113 PhD

Transportation is what moves the world! The research and the teaching at the Faculty cover a broad range of



systematic views of transport, vehicle design and transport infrastructure, passenger behavior, network and flow optimization, safety control and safety management, reliability, economics, etc. The Faculty of Transportation Sciences offers a wide spectrum of study programs led by expert researchers who educate future

professionals in transportation and logistics, as well as telecommunication engineers and also professional pilots.

doc. Ing. Pavel Hrubeš, Ph.D., dean

OUTSTANDING TEAM

Love, passion, enthusiasm and affection for motorbikes led to the formation of the CTU Lions in 2015, within the Faculty of Transportation Sciences, specifically at the Department of Vehicles. With a commitment to design and fabricate a motorbike similar to the Moto3 class, like-minded students joined hands to form a team and take part in the 5th edition of MOTOSTUDENT. Our goal is to design, develop and construct a prototype of a racing motorcycle. Currently, our team is a full member of the competition, and is focusing on the design of the motorcycle, especially the design of the frame.



STUDY PROGRAMMES IN ENGLISH

Bachelor's Degree Programme

- Professional Pilot
- Air Transport

Master's Degree Programme

- Intelligent Transport Systems
- Air Traffic Control and Management
- Intelligent Transport Systems
- Smart Cities

Doctoral Degree Programme

- Technology and Management in Transportation and Telecommunications
- Transportation Systems and Technology
- Air Traffic Control and Management
- Transportation Logistics
- Engineering Informatics of Transportation and Telecommunication

TOP RESEARCH

MAVEN: Managing Automated Vehicles Enhances Network project, funded by the EC Horizon 2020 Research and Innovation Framework Programme. MAVEN develops management regimes for highly-automated driving in

urban areas, enabling automated vehicles to reach beyond the state-of-the-art of ADAS and C-ITS applications.

UNIQUE FACILITIES

The Railway Traffic Control and Interlocking Systems Centre of Excellence is devoted to practical research in the area of rail traffic control and safety of railway operations.

INDUSTRIAL COOPERATION

Volkswagen AG is the key international partner, and there is also a wide range of other companies (e.g. Boston Venture Central Europe, AFRY CZ, AMiT, ATEM, AŽD, CDV CGI IT Czech Republic, České dráhy, DEKRA AUTOMOBIL, ROPID, SFDI, SŽ, ŠKODA AUTO, TSK Praha, etc.).

CONTACTS

Secretariat:

Zdena Osifová
+420 224 359 502
osifozde@fd.cvut.cz

International Office:

Mgr. Lenka Dostálková
+420 224 355 096
int-office@fd.cvut.cz

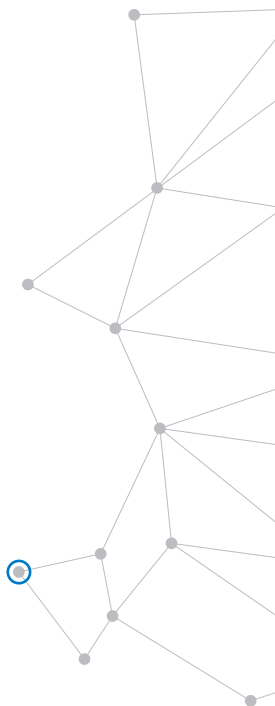
Public Relations:

doc. Ing. Zdeněk Lokaj, Ph.D.
+420 224 355 096
lokej@fd.cvut.cz

Information on Studies:

Eva Vicenová
+420 224 359 542
viceneva@fd.cvut.cz

www.fd.cvut.cz



FACULTY OF BIOMEDICAL ENGINEERING

Number of students: 994 BSc | 387 MSc | 130 PhD



The mission of the Faculty of Biomedical Engineering in the field of teaching is to provide high-quality university education in accredited study programs for students from the Czech Republic and from abroad. The study programs are targeted at linkages between technical and medical science and also include

management studies and safety studies. The Faculty offers one bachelor program, two master's programs, and one doctoral study program. Scientific work and research are carried out in the fields of applied research on developing materials for implantology, biotelemetric systems, interaction between extreme ultraviolet radiation and biological objects, quantifying the evaluation of the rehabilitation process, artificial lung ventilation, nanosensors, bio-electromagnetism, research on the brain, telemedicine, biomechanics and assistive technologies, bioreactors for tissue and organ replacements, as well as research on safety and in other fields.

prof. MUDr. Jozef Rosina, Ph.D., MBA, dean

OUTSTANDING STUDENT



Ondřej Klempíř is a student of the doctoral study program in Biomedical and Clinical Technology. He is working on deep brain stimulation, with reference to processing neurological data, from signal analysis to methods of artificial intelligence. He has contributed to three national grant-

funded projects, and in addition he has been the chief researcher for three CTU Student Grant Competition



projects. His results have been presented at national and international conferences and published in high-impact journals. One of his contributions received an IEEE Excellent Paper Award at the HealthCom 2018 conference. He was awarded the Josef Hlávka prize and the CTU's Stanislav Hanzl prize in 2019. In Biosignal Challenge 2020, supported by MathWorks, he won the first prize, together with his colleague from the University of Chemistry and Technology Prague, for developing an algorithm for estimating the speed of articulation from children's utterances.

STUDY PROGRAMMES IN ENGLISH

Bachelor Degree Programme

- Biomedical Technology

Master's Degree Programme

- Biomedical Engineering
- Systematic Integration of Processes in Health Services

Doctoral Degree Programme

- Biomedical Engineering

TOP RESEARCH

- Interaction between XUV radiation and biological objects

- Non-conventional ventilation methods and optimization of mechanical lung ventilation
- Nanocomposite and nanocrystalline materials for implantology and biomedicine
- Telemedicine systems for monitoring and supporting the treatment of diabetes patients
- Health technology assessment for medical devices
- Rehabilitation process quantification methods and systems
- Personal biotelemetry security systems for the Integrated Rescue System
- New trends in disaster medicine
- Biomechanics and assistive technology
- Biosignal recognition & artificial intelligence in neuroscience
- Bio-electromagnetism – using the electromagnetic field in biomedicine

CONTACTS

Secretariat:

Tereza Trousilová, DIS.
+420 224 358 419
trousilova@fbmi.cvut.cz

International Office:

Ing. Lucie Kulhánková
+420 224 358 493
kulhankova@fbmi.cvut.cz

Information on Studies:

Bc. Veronika Jírotková
+420 224 358 497
veronika.jirotkova@fbmi.cvut.cz

Department of Doctoral Studies:

Kamila Veselá
+420 224 355 046
kamila.vesela@fbmi.cvut.cz

www.fbmi.cvut.cz/en

FACULTY OF INFORMATION TECHNOLOGY

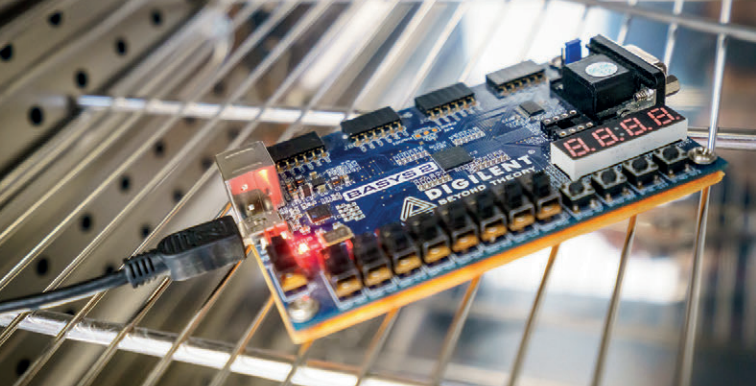
Number of students: 2,080 BSc | 978 MSc | 41 PhD



Our mission and our top priority is to raise the scientific performance of the faculty. We have been making efforts to recruit high-quality academic workers in order to strengthen our scientific capacity. Thanks to the newly-introduced internal methodology in support of research groups and laboratories, the methodology for assessing scientific

and research activities, the projects that we are carrying out, the financial support that has been made available, and last but not least thanks to our newly-built laboratories, we have been attempting to provide more time and more opportunities for scientific and research activities. In this way we are, at the same time, trying to motivate students at all levels of university study to join in scientific and research activities. We believe that by bringing experienced and scientifically proficient academic workers together with enthusiastic and well-motivated students we are able to form well-functioning research groups with great potential to have their results published. A limiting factor for our growth has been a lack of space. Within the last 11 years, the Faculty has developed into a fully-grown unit that now attracts more applicants than any of the other faculties and elements of CTU in Prague. This is a positive achievement, but it is also a big challenge for us. The Faculty does not currently have a building of its own, but we are confident that we will in the foreseeable future get adequate premises for our work and for our future development. Other priorities include more links and continued intensification of our relations with universities abroad in the fields of student mobility and research. Last but not least, we want to build up and deepen our collaboration with the commercial sphere, especially in the field of joint projects.

doc. RNDr. Ing. Marcel Jiřina, Ph.D., dean



OUTSTANDING STUDENT

Lukáš Brchl, a specialist in programming drones, set out as an ordinary student of informatics at FIT CTU, and when he handed in his master's project he certainly did not think that he would work at the Faculty one day quite soon. Or that he would be the leader of Dronetag, a successful internationally-known company. He started working on drones early in his studies. While he was still a student he joined the team at the Faculty's ImproLab laboratory. He has been working with actual drones for the last five years, and his post at the company is as an expert in drone hardware. His career began to take off in November 2018 at the Space Application Hackathon. Lukáš led a team of students that managed to win in the Navigation category. Then they established a start-up company, Dronetag, which develops small independent IoT devices for drones. FIT CTU has its own professional drone, on which the devices are tested. Lukáš Brchl works at the faculty as a scientist and as a teacher. In 2020, he was the organizer of the HackFIT technological hackathon.

STUDY PROGRAMMES IN ENGLISH

Bachelor's Degree Programme

— Computer Science

Bachelor Branches:

- Computer Security and Information technology
- Knowledge Engineering
- Software Engineering

Master's Degree Programme

— Computer Science

Master Branches:

- Computer Security
- Computer Systems and Networks
- Design and Programming of Embedded Systems
- Knowledge Engineering
- Software Engineering

Doctoral Degree Programme

— Computer Science

CONTACTS

Secretariat:

Markéta Loučková
+420 224 359 811
marketa.louckova@fit.cvut.cz

Information on Studies:

Ludmila Facer
+420 224 359 837
ludmila.facer@fit.cvut.cz
bachelor-admissions@fit.cvut.cz
master-admissions@fit.cvut.cz

Vice-Dean for External Affairs:

doc. RNDr. Josef Kolář, CSc.
josef.kolar@fit.cvut.cz
+420 224 359 872

www.fit.cvut.cz



KLOKNER INSTITUTE

The 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 it ranks among the four oldest independent scientific centres in Europe. Our main task is to carry out scientific work. We provide support in the area of specialized commercial standardization, and in the area of national and international standardization. We have four specialized departments and an accredited laboratory, and we are a workplace that issues legal expert opinions and expert reports in the field of civil engineering.

Scientific and research activities

Our work is mainly in the following fields of specialization:

- Complete reliability assessments and risk assessments of civil engineering structures and of the effects of exceptional loading and environmental impacts,
- Numerical modeling, static and dynamic calculations of civil engineering structures.
- Material engineering in the field of silicate and polymer composites,
- Developing monitoring systems for long-term observation of the behaviour of building structures.

CONTACT / Secretariat:

Petra Řehořová | +420 224 353 529 | klok@cvut.cz

www.klok.cvut.cz

MASARYK INSTITUTE OF ADVANCED STUDIES

This university institute, set up in April 1992, follows on from the traditions of the Department of Business, which from 1919 onwards formed a part of the Czech Technical University in Prague. The Department of Business formed the first university of economics in Czechoslovakia between the two world wars. It specialized in teaching economics and in teacher education, closely tied in with the specific mission of a technical university. A bachelor study programme and a master study programme in Economics can be taken in at MIAS in study programmes that are offered in Czech language and also in English language. In addition to offering full-time and combined part-time studies of economics focusing on the management of industrial companies and the unique adoption of practical skills in modern technologies, MIAS increases the employment options of Czech Technical University in Prague graduates by offering a combined part-time study programme in teacher education. This is one of the small number of workplaces in the Czech Republic that educates teachers of technical subjects for middle schools. MIAS maintains a high level of language preparation of its graduates, and offers a wide range of lifelong learning programmes.

Bachelor degree programme in english

— Economics and Management

Master degree programme in english

— Innovation Project Management

CONTACT / International Office:

muvs.international@cvut.cz

www.muvs.cvut.cz

UNIVERSITY CENTRE FOR ENERGY EFFICIENT BUILDINGS

The Centre was established in 2009 and it brings together experts from the Czech Technical University in Prague dealing with sustainable buildings. The aim is to promote energy-efficient and environment-friendly buildings that are comfortable for their users.



R&D Departments:

Architecture and the Environment

Environment-friendly, safe and comfortable buildings.

Energy Systems of Buildings

A comprehensive focus on energy savings, optimization of energy sources, and renewable energy sources utilization.

Indoor Environmental Quality

Research and development of systems that improve the quality and comfort of the indoor environment in energyefficient buildings.

Materials and Structures

Advanced tests on the mechanical properties of materials, building elements and components.

Control and Monitoring of Intelligent Buildings

Design of advanced algorithms for controlling building energy systems, development of new sensors for monitoring the indoor environment and structure.

CONTACT / Secretariat:

Mgr. Eva Čtrnáctá | +420 771 131 755 | info@uceeb.cz

www.uceeb.cvut.cz



CZECH INSTITUTE OF INFORMATICS, ROBOTICS AND CYBERNETICS

Since its foundation in 2013, the institute has firmly established its position as a centre of international excellence, a leading European centre for artificial intelligence, a mover in the Czech ecosystem for AI, and a respected centre for technology transfer.

Scientific and research activities

The Institute's cutting-edge research is concentrated in the fields of computer science, robotics, and artificial intelligence, especially in machine learning, machine perception, automated reasoning and computer vision. Transfer of know-how is conducted mainly by the National Centre for Industry 4.0, by the Centre of the City of the Future, by RICAIP Centre, and by the infrastructure of Testbed for Industry 4.0.

Doctoral Study Programmes

CIIRC CTU cooperates in the education of PhD students with the CTU faculties and with other universities. A range of research opportunities are available for students at CIIRC within the framework of their bachelor's and master's study programmes.

CONTACT / Secretariat:

Ing. Michaela Horáková | +420 224 354 139

Michaela.Horakova@cvut.cz | www.ciirc.cvut.cz

INSTITUTE OF EXPERIMENTAL AND APPLIED PHYSICS

The Institute of Experimental and Applied Physics was established in 2002 as a scientific and academic unit of the Czech Technical University in Prague with activities in physics of the microworld and its applications. The Institute works with international partners, e.g. CERN, ESA, JINR, and the University of Montreal, and also with partners in the Czech Republic (the 3rd Faculty of Medicine of the Charles University, the Faculty of Transportation Sciences of CTU, and the Faculty of Biomedical Engineering of CTU). IEAP owns or is a member of a research infrastructure (Van de Graaff, LSM Underground Laboratory, Central Detection and Analytical Laboratory).

Scientific and research activities

The program of the Institute emerges from the main scientific projects carried out on the LHC's detectors at CERN, detecting dark matter in the universe, neutrino physics, the structure of atomic nuclei and nuclear reactions, and the detection of cosmic radiation. The institute is active in R&D of new detectors of ionizing particles (semiconductor pixel detectors, scintillating detectors, gas detectors) and their applications (e.g. in imaging).

Education activities

The Institute is a training workshop for specialized aspects of the doctoral studies of Czech and foreign students, and also for IAESTE internships. The Institute also organizes University of the 3rd Age courses and the specialized training for secondary school teachers on the radiation detection.

CONTACT / Secretariat:

Martina Vanišová | +420 244 105 100

Martina.Vanisova@cvut.cz | www.utef.cvut.cz

SERVICES

INSTITUTE OF PHYSICAL EDUCATION AND SPORT

Director: doc. PaedDr. Jiří Drnek, CSc.

+420 224 351 881

Jiri.Drnek@cvut.cz

www.utvs.cvut.cz

COMPUTING AND INFORMATION CENTRE

Director: Ing. Marek Kalika, Ph.D.

+420 224 358 456

marek.kalika@cvut.cz

www.vic.cvut.cz

CENTRAL LIBRARY

Director: PhDr. Marta Machytková

+420 224 359 801

marta.machytkova@cvut.cz

www.knihovna.cvut.cz

SERVICE FACILITIES ADMINISTRATION

Temporarily entrusted with the management:

Bc. Michal Vodička

+420 234 678 259

Michal.Vodicka@cvut.cz

www.suz.cvut.cz

CTU PUBLISHING HOUSE (ČESKÁ TECHNIKA)

Director: PhDr. Vladimíra Kučerová

+420 224 355 030

vladimira.kucerova@cvut.cz

www.ctn.cvut.cz



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 has twice enjoyed great success when it played concerts in Cambridge. In 2013, the orchestra presented a programme under the title *Jewels of Czech Music*, and in 2019 the title was *Jewels of Czech and World Music*. In 2017, the orchestra performed in Aachen. A number of renowned soloists have appeared with the orchestra.





CTU STUDENT UNION

With more than 11,000 members, the CTU Student Union is the biggest student organization in central Europe. It brings together a total of 24 student clubs, based on a student dormitory or on an interest group. There are dormitory clubs functioning at each of the CTU dorms. They handle high-speed internet links (1 Gb/s) and also work on dozens of projects (festivals, free-time activities, education, etc.). Special interest clubs cover a wide range of interests of students, and enable them to progress in activities that they like and are interested in. There are faculty clubs (BION, eFDrive, Engineering Student Club, FIT++, +/-FEL, the Association of Students of Architecture) and also other clubs – the Engineers Prague ice-hockey team, the CTU Students' Audiovisual Centre, the International Student Club, etc.

A list of clubs can be found (in the link below).

www.su.cvut.cz



FORMULA STUDENT

CTU CarTech and eForce FEE Prague Formula are 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 500 universities all over the world participate. Our teams contends for top results.

CTU CarTech brings together 40 students from several of the faculties of CTU. Since 2007, students have been able to construct a new car each year. The newest car is equipped with a carbon fiber monocoque, a carbon fiber fuel tank, and a much-modified combustion engine. Almost all the parts of the car are developed by students. The team uses cutting edge technology, such as titanium 3D printing and carbon fiber prepreg materials. This is one of the reasons why the car weighs only 195 kg.



eForce FEE Prague Formula brings together 60 students from many fields of study, mostly from the Faculties of Electrical Engineering and Mechanical Engineering at CTU in Prague. Since its founding in 2010, eForce remained the only Czech Formula Student team to successfully build an electric-powered formula on a yearly basis. In 2020, in addition to the optimized model of the electric formula, the team also presented a complete novelty. An autonomous driverless formula that the team was the first to construct in the Czech Republic. Both formulas have won several awards in online alternatives to traditional international races.

CONTACTS

Rector / Czech Technical University in Prague

doc. RNDr. Vojtěch Petráček, CSc.

+420 224 353 486

Vojtech.Petracek@cvut.cz

Vice-Rectors:

for Bachelor and Master Studies:

doc. Dr. Ing. Gabriela Achtenová

+420 224 353 472

Gabriela.Achtenova@cvut.cz

for Science, Creative Activities and PhD Studies:

prof. Ing. Zbyněk Škvor, CSc.

+420 224 353 385

Zbynek.Skvor@cvut.cz

for International Relations:

prof. Ing. Oldřich Starý, CSc.

+420 224 355 140

staryo@fel.cvut.cz

for Development and Strategy:

Ing. Veronika Kramaříková, MBA

+420 224 353 470

Veronika.Kramarikova@cvut.cz

for Quality Management:

Ing. Radek Holý

+420 224 358 454

Radek.Holy@cvut.cz

for Construction:

prof. Ing. Alena Kohoutková, CSc.

+420 224 353 740

akohout@fsv.cvut.cz

