



# The Czech Technical University in Prague

## České vysoké učení technické v Praze

Abbreviation in Czech: ČVUT

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## History

- Engineering education has a long tradition in the Czech lands. One of its founders, Christian Joseph Willenberg, addressed a petition to Emperor Leopold I in January 1705, asking permission to begin teaching engineering sciences. Leopold's son, Emperor Joseph I, who succeeded his father on the Habsburg throne, responded to this request on January 18<sup>th</sup>, 1707 with a decree in which he ordered the Czech general Estates to found an engineering school in Prague [Rescript of the Emperor Joseph I [www.cvut.cz/en/history/rescript](http://www.cvut.cz/en/history/rescript)]. Willenberg began teaching in his private flat with only 12 students. However, the number of students grew rapidly and reached more than 200 in 1779. Willenberg's successor was Jan Ferdinand Schor, author of the textbook on mathematical sciences taught at the Institute.

In 1806, following the project of František Josef Gerstner, based on the model of the Ecole Polytechnique de Paris, the institute of Engineering Education was transformed into Prague Polytechnic. At that time Prague Polytechnic was the only school of higher technical education in the Austrian empire.

In 1863, Prague Polytechnic was transformed into a technical university headed by a rector. At that time the studies were divided into 4 fields of specialization: Mechanical Engineering, Chemistry, Civil Engineering and Architecture.

In 1891, František Křižík, a former student of Prague Polytechnic, constructed the first electric street car in Prague. Architect Josef Zitek, a professor at the Polytechnic, designed many beautiful buildings in the Czech lands, Germany and Austria. His work

included the National Theatre in Prague, the jewel of Czech architecture. In 1912 Jan Zvoníček, professor of theory and design of steam engines and compressors, invented a radial steam turbine.

After the disintegration of the Austro-Hungarian Empire, the name of the school was changed in 1920 to the Czech Technical University in Prague, which united seven schools, including the School of Chemical Technology, the School of Agriculture and Forestry, and the School of Business. These three schools developed into independent universities in the early 1950s.

In 1921, Academician František Klokner founded a research and testing institute for materials and structures, attached to CTU. This was the first institute of its kind in Central Europe, and it is still functioning today.

CTU Professor František Běhounek, a postgraduate student of Marie Curie-Sklodowska, made important contributions to dosimetry. He participated in two expeditions to the North Pole, the second of which, led by Italian general Umberto Nobile, ended with the tragic crash of the airship Italia. Běhounek continued making improvised measurements of natural radioactivity in the survivors' camp and obtained very important data.

In 1975, Professor Vlado Prelog, a 1928 CTU graduate, won the Nobel Prize for Chemistry.

During the last three quarters of the 20<sup>th</sup> century, there have been enormous advances in engineering and science worldwide. However, the developments in the Czechoslovak Republic were slowed down by the Nazi occupation (1938-1945), when all universities were closed for six years, and by the economically stagnating communist regime (1948-1989), when political oppression also had negative impacts. Hundreds of students and scores of lecturers and researchers were expelled from the universities and research institutes. Nevertheless, during these difficult times graduates and staff members of the Czech Technical University created numerous remarkable engineering and architectural works, developed noteworthy technologies, mechanical and electrical equipment, and achieved notable scientific accomplishments and inventions. Outstanding personalities associated with CTU have been so numerous that it would be unfair to name a few here and to overlook the others. Many have gained noteworthy prizes and awards, others have been promoted to Doctors honoris causa.

In the course of the last sixty years, the Czech Technical University in Prague has undergone several reorganisations: the faculty of economic sciences was closed after 1948, and the faculty of chemical technology and the faculty of agriculture became independent universities in 1952. After 1960, CTU had four faculties: civil engineering, mechanical engineering, electrical engineering, and a forerunner of the present faculty of nuclear sciences and physical engineering. The faculty of architecture was founded in 1976, the faculty of transportation science in 1993, and the faculty of biomedical engineering in 2005 - so at present, CTU has seven faculties.

## Structure of the Institution

- CTU provides high-quality university education through an extensive portfolio of primarily engineering fields of study, conducts basic and applied research and numerous scientific projects, with emphasis on industrial applications, and cooperates closely with domestic and foreign-based institutions.

The University educates future experts, scientists and managers who are dynamic and flexible in adapting to the market. CTU had a total of 24,450 students and 1,631 academic staff in the 2007/08 academic year. In the 2007/08 academic year, CTU offered 44 study programmes and a total of 159 study branches within these programmes.

The Czech Technical University in Prague is made up of the following institutions.

#### Faculties

- Faculty of Civil Engineering - [www.fsv.cvut.cz/index.php/en](http://www.fsv.cvut.cz/index.php/en)
- Faculty of Mechanical Engineering - [www3.fs.cvut.cz/web/?L=1](http://www3.fs.cvut.cz/web/?L=1)
- Faculty of Electrical Engineering - [www.fel.cvut.cz/en/](http://www.fel.cvut.cz/en/)
- Faculty of Nuclear Sciences and Physical Engineering - [www-en.fjfi.cvut.cz](http://www-en.fjfi.cvut.cz)
- Faculty of Architecture - [www.fa.cvut.cz](http://www.fa.cvut.cz)
- Faculty of Transportation Sciences - [www.fd.cvut.cz/english](http://www.fd.cvut.cz/english)
- Faculty of Biomedical Engineering - [www.fbmi.cvut.cz/en](http://www.fbmi.cvut.cz/en)

#### Higher Education Institutes

- Klokner Institute - [web.cvut.cz/ki](http://web.cvut.cz/ki)
- Masaryk Institute of Advanced Studies - [www.muvs.cvut.cz](http://www.muvs.cvut.cz)
- Institute of Physical Education and Sport - [www.cvut.cz/en/institutes/ipes](http://www.cvut.cz/en/institutes/ipes)

#### Other constituent parts

- Computing and Information Centre - [www.cvut.cz/en/parts/cic](http://www.cvut.cz/en/parts/cic)
- Technology and Innovation Centre - [www.bic.cvut.cz](http://www.bic.cvut.cz)
- Research Centre for Industrial Heritage - [vcpd.cvut.cz](http://vcpd.cvut.cz)
- Institute of Experimental and Applied Physics - [www.utef.cvut.cz/en](http://www.utef.cvut.cz/en)
- Centre for Radiochemistry and Radiation Chemistry - [www.cvut.cz/en/parts/crrc](http://www.cvut.cz/en/parts/crrc)
- Division of Construction and Investment - [www.cvut.cz/en/parts/dci](http://www.cvut.cz/en/parts/dci)

### Faculty of Civil Engineering

- With over 6,000 students in various civil engineering programmes and about 600 students graduating at master level every year, the Faculty of Civil Engineering of CTU in Prague is the Czech Republic's largest civil engineering faculty.

The Faculty's education system is designed to meet present day requirements, i.e., to provide a solid theoretical background that will make the students highly flexible and employable after graduating. A new student care system recently established by a number of large companies has added a brand new dimension.

The faculty cooperates with over a hundred foreign-based universities and selected prestigious centres worldwide. As a result, both the students and the academic staff have many opportunities to sign up for study, internship and fellowship programmes abroad.

### Faculty of Mechanical Engineering

- The Faculty of Mechanical Engineering, a direct successor to the Engineering School in Prague, has a very long tradition. Mechanical engineering as an independent field of study has been taught here since 1864.

The aim of the Faculty is to be a high-level educational and scientific institution recognized both locally and abroad. The Faculty harmonizes its processes with those applied in the European education and research area, and at the same time strives to

attract new students and to meet societal needs. In recent years the Faculty has established two detached sites, in Sezimovo Ústí and in Chomutov. Both offer a full-time 1<sup>st</sup> year Bachelor programme.

The Faculty cooperates with many leading research organizations and centres at universities and institutions in the Czech Republic and abroad. Research at the Faculty is also carried out at scientific centres, e.g. the Josef Božek Research Centre for Automotive Engineering and the Research Centre for Manufacturing Technologies.

## Faculty of Electrical Engineering

- With 7 000 students and 640 employees, the Faculty of Electrical Engineering is a prestigious research and teaching institution with an extensive portfolio of modern fields of technical expertise. Research is done in areas ranging from particle physics through state of the art magnetic sensors for satellites to the work done at the intermedia institute, which links the worlds of technology and the arts.

The history of the Faculty of Electrical Engineering dates back to the end of the 19<sup>th</sup> century. Its long tradition and prestigious achievements underlie the rich portfolio of modern areas of study that is now on offer.

Academic staff and students profit from fruitful cooperation with international and local companies. Hundreds of students from all over the world contribute to our unique environment, and benefit from the opportunity to choose careers in top global companies.

For over a hundred years, learning and research at the University has played a major part in the success of the region and the continent, and has contributed to the advancement of knowledge and to technology transfer. We are determined to stay at the forefront of world research in the 21<sup>st</sup> century.

## Faculty of Nuclear Sciences and Physical Engineering

- The education and research at the Faculty of Nuclear Sciences and Physical Engineering have an interdisciplinary character dynamically bridging applied mathematics and physics, computer science and chemistry, natural sciences and engineering applications.

The activities of the Faculty are related to nuclear engineering, radiation protection, environmental engineering, nuclear physics, nuclear fusion, nuclear chemistry, advanced material science and engineering, space engineering, solid-state physics, optics, laser physics and engineering, nanotechnology, mathematical modelling, scientific computing and computer science in natural sciences.

The students of the Faculty benefit from an individual approach, and are frequently involved in research activities related to international collaboration.

The Faculty curriculum consists of a deep mathematical and physical background oriented toward applications, which leads on to advanced education in recent developments in science and technology. The graduates of the Faculty then have a strong chance to find attractive jobs in research and development, as well as in industry, finance, or health care. They are also well prepared to start up their own business.

## Faculty of Architecture

- The Faculty of Architecture provides its students with know-how and expertise, and also with a detailed picture of today's world, with all the contexts and resources that influence contemporary architecture.

One of the key goals of the Faculty of Architecture is to maintain a well-balanced curriculum of humanistic, theoretical and artistic courses. The Faculty follows the objectives of European technical universities in all of its programmes, and its curriculum is fully comparable and compatible with the curricula of other leading faculties of architecture.

Standard Bachelor, Master and PhD programmes last three, two and three years, respectively. The Bachelor and Master programmes are on a full-time basis. The PhD programmes are available on a full-time or part-time basis. The Master programme is recognized by the Czech Chamber of Architects as a qualification leading to CCA authorisation.

The programme of the Faculty of Architecture is fully accredited in the EU countries under the 85/384/EHS and 2005/36/EC Directives.

## Faculty of Transportation Sciences

- The Faculty of Transportation Sciences presents transport as an industry with a bright future that involves the use of modern technology, smart transportation systems and ever-improving public transport networks to enhance the quality of life and protect the environment.

The Faculty offers Bachelor, Master and PhD programmes lasting four (Professional pilot – three and half), two and three years, respectively.

The curricula in the 3<sup>rd</sup> and 4<sup>th</sup> year of the Bachelor programmes and in both years of the Master programmes are strongly project-oriented. The projects are designed in cooperation with experts from industry. The aim is to give students an opportunity to solve real-life problems in the transportation and telecommunication industries. The project work is done in teams led by experts from the Faculty of Transportation Sciences and by professionals from industry.

## Faculty of Biomedical Engineering

- Established in 2005, the Faculty of Biomedical Engineering currently has about 530 students. Most classes take place in Kladno, where the Faculty's registered office is located. Biomedical engineering is a fairly new, fast-growing field of expertise based on applying engineering methods and techniques to biology and medicine. The Bachelor study program emphasizes a practical approach to medical technology, while the Master study program is strongly project-oriented. Student teams work on exciting research projects in new laboratories and auditoria. Experts from hospitals in Prague and the Central Bohemian Region are involved. In addition, students can spend a part of their studies abroad to gain valuable experience. The Faculty also offers a wide spectrum of topics for PhD studies. The Faculty is currently preparing a new Specialization in Health Care Bachelor programme, including e.g. studies in optics and optometry, physiotherapy, and rescue services, and keeps extending its teaching and laboratory premises to enhance the quality of its portfolio of courses.

## Organization of Studies

- CTU offers accredited Bachelor, Master and PhD programmes. Each faculty has a specific portfolio of such programmes.

### **Bachelor programmes**

Standard duration 3-4 years, full-time only, shorter form of university education.

Basic ■  
 Statistical Data  
 in Academic Year  
 2007/2008

Graduates from the Bachelor programmes are awarded a Bachelor degree (Bc.). They have the theoretical and practical expertise required for technical jobs in industry, at institutions and schools, and also in commerce and services. They are also well prepared for further studies.

**Master Programmes**

A wide range of Master programmes are offered. The normal length of the programme is 3-4 semesters. There are a limited number of obligatory courses, and students can choose optional courses and project themes that reflect their personal preferences and interests. Graduates are awarded an "Ing." degree. This is equivalent to an MEng/MSc degree.

**PhD programmes**

Standard duration 3-4 years, designed for Master programme graduates. The students are prepared for the most challenging tasks posed by applied science and industrial practice. The programme ends with PhD state exams and the presentation and defence of a dissertation. In this way, PhD students prove their aptitude for independent and creative scientific work. The graduates are awarded a PhD degree.

Groups of branches	Number of		
	entered application forms	accepted applicants	registered applicants
Technical sciences	14 106	10 845	7 889
Education	210	175	161
Total	14 316	11 020	8 050

Number of students in accredited study programmes on October 31, 2007

Groups of study programmes	Students in study programme								Total number of students
	bachelor		master		continued master		doctoral		
	FT	PT	FT	PT	FT	PT	FT	PT	
Technical sciences	13 484	1 033	3 211	90	2 709	441	1 506	1 234	23 708
Education	254	276							530
Total	13 738	1 309	3 211	90	2 709	441	1 506	1 234	24 238

Note: FT – full-time study, PT – part-time study

Number of graduates in accredited study programmes during the period from January 1, 2007 until December 31, 2007

Groups of study programmes	Graduates in study programmes								Total number of graduates
	bachelor		master		continued master		doctoral		
	FT	PT	FT	PT	FT	PT	FT	PT	
Technical sciences	1 750	64	1 798	74	151	58	79	127	4 101
Pedagogy	42	48							90
Complete	1 792	112	1798	74	151	58	79	127	4 191

Note: FT – full-time study, PT – combined form