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Barrier-free education at the Czech Technical University in Prague - modern European university

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Abstract

Modern society should make higher education accessible to all gifted students, regardless of their economic situation, religion, or health. The society should strive to fulfill the right to freedom of movement of its citizens by removing barriers, in order to integrate the handicapped citizens. This article deals with accessibility to the Czech Technical University in Prague by the handicapped students and their options for successful studies.

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1. Introduction

The Czech Technical University (CTU) in Prague was founded on January 18, 1707, as the first public engineering school in central Europe. Its founder was the Emperor Joseph I, but the initiative belonged to Christian Joseph Willenberg, a highly regarded fortification specialist, who was named a professor by a decree of the general Estates on November 9, 1717. The university was named the “Estates Engineering School in Prague” and the first schooling programs were launched in January 1718. The prestigious “École Nationale des Ponts et Chaussées” in Paris was founded only 30 years later.

Initially, the Estates Engineering School in Prague focused only narrowly on the military and fortification matters. Its curriculum was expanded to include civil engineering only during the tenures of two prominent

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figures: Jan Ferdinand Schor, its second professor, a painter and architect, and Frantisek Antonin Leonard Herget, its third professor, a land surveyor and water management expert.

In 1803, the Emperor Francis II proposed to transform the engineering school into a polytechnic school. The principle personality behind this effort was Franisek Josep Gerstner, an astronomer, professor of mathematics and mechanics, and the architect of the horsecar from Ceske Budejovice to Linz, who modeled the school after the polytechnic school in Paris. The Prague Polytechnic existed as a part of the Prague University until its independence in 1815. It was located in the Husova Street in the Old Town. Along with Franisek Josep Gerstner, its other eminent personality was Christian Doppler, professor of mathematics and practical geometry.

Another milestone in the history of the Prague Polytechnic was the approval of its first Status in 1863, which became the foundation of its new pedagogical organization and management of a higher education institution, headed by an elected rector.

The Czech language was used equally with German, despite the fact that conflicts between the Czech and German staff led to the division into a Czech and German institutes in 1869. A new building was built for the Czech institute at the Charles Square in the New Town, according to a plan by architect Ullmann. In 1878, two state exams were introduced and as of 1901, the school was granted the right to award the doctoral titles in technical sciences.

The school assumed the name Czech Technical University in Prague in 1920. It then comprised seven higher education schools. It was closed during the Nazi occupation and reopened after the liberation in 1945 [5].

The intention of this short historic overview was to show that the CTU in Prague has a rich history and a tradition of remarkable personalities and achievements. Nevertheless, we live in the 21st century when a modern European university must offer the highest standards of superb education, competent staff, and well-equipped laboratories to all the gifted students who wish to pursue their degrees. One of the obstacles to education (the article focuses on universities but they can be generalized for any educational level) are various disabilities, which could potentially prevent handicapped students from embarking on or completing the studies. In the contemporary open society, however, disabilities should not be the reason why a student should not study at the institution of his/her choice in the field, in which he/she can prove to be an asset. This is also enshrined in Article 33 of the Charter of Fundamental Rights and Basic Freedoms [6], which guarantees universal right to education.

Making education available to the handicapped students requires adjustments in three areas:
1. barrier-free access to buildings;
2. barrier-free use of buildings;
3. access to lectures and educational materials.

Adjustments in all these three areas are guaranteed both in the Czech legislation and in the rules and regulations of the CTU in Prague.

2. Legislation in the Czech Republic

Rights of the handicapped persons are firmly anchored in the Czech legislation in the form of laws, norms, and methodologies. The legislation, however, does not define the term “handicapped person”. Rather, it uses the term “persons with limited ability of movement and orientation,” which refers not only to persons with physical, visual, hearing or mental impairment, but also to seniors, pregnant women or children younger than three and their accompaniment [7].

The chief legislative norms are as follows:
- Act No. 183/2006 Coll., about local planning and construction regulations, as last amended on January 1, 2013;
- Regulation No. 398/2009 Coll., about general technical requirements guaranteeing barrier-free use of buildings.
The Czech Republic has additional rules and regulations for specialized areas of the issue, such CSN 73 6110 - Design of Urban roads, which requires that proposals for design of local routes must make them safe for all its users.

Regulation No. 398/2009 Coll. [7] applies to the following situations:

- processing of documentation for issuance of territorial decisions;
- processing of simple technical descriptions of plans for issuance of territorial agreements;
- processing of project documentation;
- approval, announcement, and realization of construction;
- issuance of final approval agreement;
- use or removal of buildings or installations;
- building inspections.

Buildings covered by this regulation include buildings containing civil equipment, such as schools, preschools, and other schooling establishments. All new or reconstructed buildings belonging to such buildings should therefore have the parameters for barrier-free use in order to be suitable for persons listed in paragraph one of this section.

3. Students with special needs

The Faculty of Nuclear Sciences and Physical Engineering of the CTU in Prague established shortly after the end of communism in 1992 the TEREZA center to enable access to higher education to visually impaired students. In 2007, the CTU in Prague established the Handicap Advisory Center to assist students with other than visual impairments. As of 2012, both centers were merged into the ELSA Center for Support of Students with Special Needs [1]. The ELSA Center falls under the competence of the rectorate of the CTU in Prague, specifically the Student Affairs Department. By this move, the CTU in Prague has clearly demonstrated its readiness to tackle the problem and open its educational programs to all the interested students.

Parents or persons with full-time employment, who at the same time pursue their education, fall into the category of students with special needs as well. The CTU in Prague runs a kindergarten called “The Little Lions,” which helps them to combine the student and parental responsibilities. The CTU in Prague is a pioneer among the Czech universities in this regard. This is an issue to which we would like to dedicate a separate article, since one of the authors of this article was active in establishing the kindergarten.

In addition to parents with small children, it is necessary to pay attention to the needs and look for solutions for persons with the following types of handicaps (or their combinations):

- visually impaired or blind;
- impaired hearing;
- physically challenged, particularly the wheelchair-bound.

Persons suffering from these impairments can be referred to as disadvantaged persons or persons with special needs. Since all of these impairments manifest themselves in specific ways, they must be addressed individually. At the same time, solutions in removing barriers must always be of a complex nature.

The term persons with special needs is very important in the context of education, since the health disabilities must include, besides the physical ones, also the following:

- specific learning impairments;
- psychological problems;
- chronic somatic disease.

The Study and Examination Code for Students at the CTU in Prague [2] states that students and applicants with special needs are entitled to modifications in the studies requirements. This easement is governed by the methodological instruction from 2012 about the support of students and applicants with special needs at CTU in Prague.
Between November 2012 and June 2013, the ELSA Center took under its patronage a project to map all the main buildings of the CTU in Prague under the project „Barrier-free Czech Technical University.“ Individual buildings are described in the textual part, along with their visual documentation (maps, floor plans, photographs) and description of the access routes.

Particular problem is posed by buildings that are part of the old building complexes, especially in the protected heritage zones. For example, the Faculty of Transportation Sciences comprises of three buildings, out of which two have already undergone reconstruction to install barrier-free elements as widely as possible. The CTU in Prague is also trying to find a solution for the accessibility to its dormitories by constructing or reconstructing barrier-free rooms. For example, the Masaryk Dormitories now have barrier-free rooms on different levels. The Dejvice Dormitories are not equipped with the elevator, therefore the barrier-free rooms are located on the ground floor, which is also convenient from the point of view of the daily building traffic and fire safety. It will also be technically possible to install acoustic isolation in selected rooms to address the needs of students with hearing impairments [4].

The following overview provides statistics about students with specific needs who studied at the CTU in Prague in the academic years 2011-2012 and 2012-2013, their numbers and types of impairments:

Table 1. Number of registered students with special needs at the CTU in Prague in the academic year 2011-2012:

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Number of students with visual, hearing or motoric impairment</th>
<th>Number of students with specific learning disability</th>
<th>Number of students with psychological disability or chronic static disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Civil Engineering</td>
<td>0</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Mechanical Engineering</td>
<td>3</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Faculty of Electrical Engineering</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Faculty of Nuclear Sciences and Physical Engineering</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Faculty of Architecture</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Transportation Sciences</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Faculty of Biomedical Engineering</td>
<td>8</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Information Technology</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 2. Number of registered students with special needs at the CTU in the academic year 2012-2013:

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Number of students with visual, hearing or motoric impairment</th>
<th>Number of students with specific learning disability</th>
<th>Number of students with psychological disability or chronic static disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Civil Engineering</td>
<td>0</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Mechanical Engineering</td>
<td>3</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Electrical Engineering</td>
<td>2</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Faculty of Nuclear Sciences and Physical Engineering</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Faculty of Architecture</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Faculty of Transportation Sciences</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Biomedical Engineering</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Faculty of Information Technology</td>
<td>0</td>
<td>9</td>
<td>2</td>
</tr>
</tbody>
</table>

The figures account only for those students who have registered with the ELSA Center. There are, however, additional students who choose to confront and manage their limitations on an individual level. Handicapped students at the CTU in Prague usually do not seek any advantages but try to integrate as much as possible among other students.

4. Service arrangements for students with specific needs

While the preceding section outlined the different limitations students can face and their protection in the legislative and other documents, this section lays out an overview of what the ELSA Center offers to students with special needs [1].

Students with hearing impairments can make a use of visualization and note-taking services, as well as of interpretation services. It is also possible to transfer scripts into the Braille characters and mathematical formulas. Such transfer is, however, time consuming and its completion can last more than half-a-year. Under the digitalization and library services, the study materials are being made accessible, including adaptation of specialized symbolism and transfer of the materials into a tactile form. The ELSA Center also offers services of general assistance, personal assistance and training of orientation in space.

The organizational-methodological service offers to students training of studying and working strategies, which allows them to adopt working methods, which will help them to compensate as much as possible for their motoric, sensory and cognitive impairments. In addition, the ELSA Center arranges individual study programs, where necessary. Technical services guarantee accessibility to the technical equipment, with the possibility of borrowing.

Counseling on how to best take advantage and understand the whole spectrum of services is an integral part of the assistance as well. There are many different services that the ELSA Center offers and the aim is to help students on an individual basis with his/her specific needs.

Students can also receive time compensation, meaning that they are allowed longer deadlines, taking into consideration the student’s specific impairment and the task.
5. Studies at the CTU in Prague focused on the barrier-free environment

At the CTU in Prague, students can choose subjects in which they can learn how to design barrier-free environments and thus remove barriers for different types of disabilities. For example, the Faculty of Architecture and Faculty of Civil Engineering provide instruction on how to design and construct buildings not only for people without disabilities, but also for the handicapped.

The Faculty of Transportation Sciences teaches subjects, which take into consideration the needs of the handicapped when designing roads. A special subject “Barrier-free Transportation” gives students the opportunity not only to become familiar with the current legislative regulations, but also to interact with specialists from the field and attend events designed to experience what it is like to be handicapped (see Fig. 4). This is an invaluable tool for taking the perspective of the handicapped when designing barrier-free solutions in their later professional lives.

Students of the Faculty of Transportation Sciences can also participate in the student project “Barriers in Transportation”, which focuses on removal of barriers not only from the point of view of transportation and construction, but also from the point of view of information and technologies.

The CTU in Prague offers regular seminars on the subject and cooperates with expert organizations, for example with the Prague Organization for Persons in a Wheelchair (Czech acronym POV) or the United Organization of the Blind and Visually Impaired in the Czech Republic (Czech acronym SONS).

6. Selected photographs from the CTU in Prague

![Staircase platform – Horská building (Faculty of Transportation Sciences)](image-url)
7. Conclusion

The aim of this article was to introduce the Czech Technical University in Prague as a public institution of higher education, which recognizes the imperative to take into consideration and make the necessary adjustments to accommodate students with special needs or the handicapped. The ELSA Center, which functions as a standing specialized department to help address the problems and needs of students with disabilities, is one of the answers. The CTU in Prague is also engaged in a project, which aims to remove architectural barriers through building adjustments, and also is preparing an electronic manual for easier access and movement in its buildings. The curriculum contains subjects which teach students how to propose barrier-free environment, i.e. buildings and local roads. We are happy to work at such a university.
References
[4] Prague Technology 2/2013, ISSN 1213-5348