BRNO UNIVERSITY OF TECHNOLOGY

An overview of industrial PhD programme approach

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1 500 | **8 %**
PhD students

4 700 | **26 %**
foreign students

5 300 | **29 %**
female students

18 500
students

165
study programmes

40
bachelor study programs

65
master's degree programs

55
doctoral study programs

Background

"The **future** of the Czech Republic lies in the high added value that can only be brought by highly competent people, and Industrial doctorates are one of the ways to create them," (Premier Minister)

"The introduction of Industrial doctorates will be **beneficial** for all actors, students will have the opportunity to work with top companies, for schools this new model will bring funds to improve work with students, companies will establish closer cooperation with universities, and all this is a good prerequisite for strengthening transfer, i.e. greater appreciation of science results for our economy," (Ministery of education)

"Industrial doctoral programmes represent one of the **important** steps towards making doctoral studies in the Czech Republic more effective," (Premier Minister)

"Although there are collaborations in the Czech Republic at the student-university-company level, it is usually the result of well-established individual communication. For the effective functioning of the industrial doctorate system, it is necessary to set a **framework of rules** at the national level,"(Ministery of education)

"There is considerable **interest** in industrial doctorates from the private sector. They can provide companies with long-term cooperation with top research organizations and their capacities. At the same time, they will help prepare young scientists for practice according to the needs of the companies involved. The very concept of industrial doctorates creates opportunities for the commercial sector to collaborate with scientists who could become strategic partners in the research field in the **future**." (Ministery of Industry)

Background

(legal context)

„**Czech Economical strategy 2040**“, a document highlighting Czech Government key areas of focus specify „Development of education“ and „Support for research and Innovation“ as a TOP priority. The aim is to increase the added value of Czech companies and to ensure the long-term sustainability of public institutions.

University Act is the main legal frame for aplying details of Industrial PhD programs in Czech Republic. Industrial PhD studies equals to common PhD studies with the only difference of contractually anchored cooperation between the university, the student and the commercial entity. Length of PhD studies is typically 4 years. There are no any simplifications or facilitations compared to regular doctorates.

Labour Code is the legal act frame for aplying details of Industrial PhD programs in Czech Republic. Industrial PhD studies equals to common PhD studies with the only difference of contractually anchored cooperation between the university, the student and the commercial entity

Key benefits of Industrial PhD studies

Industrial doctorates at BUT are designed as an extension of the standard doctoral study with the active involvement of an application partner. This concept strengthens cooperation between the university and industrial companies, while bringing high added value for the doctoral students themselves.

Companies with developed research and development activities are particularly interested in industrial doctorates, which can thus effectively strengthen this area.

The **company** gains access to the professional capacities and research infrastructure of the university. The **university's** industrial doctorates help to formulate attractive topics of study with high relevance to industrial practice and open the door to the technological equipment and data base of the application partner.

The **PhD student‘s** benefits from the connection to the university and the industrial company and develops his scientific research activities in an application context, moreover with a guaranteed income.

Main challenges of Industrial PhD studies

Applicators usually show concerns about **intellectual property**, about the confidentiality of research results and require an employment contract with the doctoral student, followed by signing a non-disclosure agreement (NDA). The agreement in this respect takes place exclusively between the student and the application subject.

The amendment to the University Act valid since Autums 2025 sets the **minimum income** for doctoral students. The choice of funding source (scholarship, salary from a commercial entity or a combination) is left to the decision of the higher education institution. Scholarship funding cost expected to increase by 14%.

Challenging is a compliance of the **employment relationship** of the doctoral student, whose content will be the creation of the dissertation, with the Labour Code.

Experience with the implementation of industrial PhD‘s at BUT

Example of excellent cooperation: Faculty of Mechanical Engineering + Škoda Auto

Students have been involved in industrial Ph.D. studies for several years. The first defenses of dissertations are planned for the end of this academic year. The research topics are vehicle aerodynamics, barrier tests, motorsport, hybrid control and engine dynamics.

This cooperation shows an effective way to develop research and publishing activities in cooperation with a large corporation.

For doctoral students, this is a unique opportunity to design their dissertation in cooperation with professionals and using the technical background of Škoda Auto. Students are financed on the basis of an employment relationship with Škoda Auto. The employment contract between the doctoral student and the application entity is a typical element that follows the conclusion of the Industrial Doctorate Agreement/Agreement.

The job description is set in accordance with the topic of the dissertation, which ensures that the doctoral student is engaged in relevant research activities in an industrial company. This should ensure the deductibility of income from this employment relationship as a guaranteed doctoral income in accordance with the approved amendment to the University Act.

Experience with the implementation of PhD doctorates at BUT

BUT is currently preparing industrial doctorates with a number of industrial partners from various fields, such as Onsemi (**semiconductors**), VZLU, **aviation** and **space** industry) and Honeywell (**electronics**, space industry). However, a large number of doctoral students are already working at BUT in form of student‘s part-time employment in an industrial company and simultaneous full-time or combined doctoral studies at BUT.

From the institute of industrial doctorate, BUT expects a clearer definition of the conditions of cooperation in the form of a written Agreement. This will prevent later misunderstandings and disputes, which occurred at BUT, especially in connection with the publication of the defended dissertation. In some cases, the disclosure was attacked by industry partners as a leak of confidential internal information. The intention is therefore to clearly formulate all informal agreements before starting the industrial doctorate and to set them out transparently in the relevant Contract/Agreement.

The above-mentioned experience shows areas that need special attention when negotiating cooperation. In particular, it is a requirement for the final text of the dissertation to be checked by the application entity before its submission and also to set the conditions for early termination of studies. The difficulty of finding a suitable contractual regulation is further enhanced in cases where the application entity is part of a multinational corporation and the contract is assessed from the point of view of various, especially foreign, legal regulations.

Small companies

An Interesting approach is seen from small companies who see costs related to PhD student as an investment with high risk-to-loose due to student‘s tendency to leave their studies before finishing.

Industry Council

The Industry Council is the rector's advisory board.
The goal of the Industry Council is to create a communication interface in order to support quality management and decision-making in the areas of:

- studies and education,
- research, development, innovation and other creative activities,
- knowledge transfer.

The Industry Council simultaneously fulfills the role of the Commercialization Council.
The members of the Industry Council are composed of representatives of employers and partners from the application sphere. Currently, the Industry Council consists of a chairman and twelve members.

Industry Council is closely involved in two important BUT‘s projects:

STEM education

The percentage of STEM students among students has fallen from 35% to 28%. The total number of graduates in technical fields has long lagged behind the demand of development teams and innovative companies.

System engineering

The High-Tech companies shows an increased demand for highlighly qualified alumnies with interdisciplinary competencies. BUT has started a project to develop a new studying programs to adress these requirements.


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