VŠB TECHNICKÁ UNIVERZITA OSTRAVA | HORNICKO GEOLOGICKÁ FAKULTA

# Bezpilotní systémy

*Vygenerováno: 27. 3. 2026*

| | |
|---|---|
| **Fakulta** | Hornicko-geologická fakulta |
| **Typ studia** | doktorské |
| **Jazyk výuky** | angličtina |
| **Kód programu** | P0716D270002 |
| **Název programu** | Bezpilotní systémy |
| **Standardní délka studia** | 4 roky |
| **Garantující katedra** | Katedra geoinformatiky |
| **Garant** | doc. Ing. Michal Kačmařík, Ph.D. |
| **Oblasti vzdělávání (zaměření)** | Kybernetika, Vědy o zemi, Stavebnictví, Strojírenství, technologie a materiály, Elektrotechnika |
| **Klíčová slova** | sběr a zpracování dat, dron, návrh a konstrukce, vývoj řídících, komunikačích a senzorických systémů, bezpilotní letadlo |

## O studijním programu

The Unmanned Systems study program responds to the dynamically developing market utilizing these technologies in an ever-wider range of human activities and addresses current trends within the strategic requirements of Industry 5.0 and Society 5.0, big data, and artificial intelligence. Students are comprehensively familiarized with the operation of unmanned aircraft, including legislative aspects, and gain practical experience in flying unmanned aircraft and capturing and processing image and other recordings. Depending on the topic of their dissertation, they deepen their theoretical and practical knowledge in necessary areas such as the development of new materials and the construction of unmanned aircraft, the development of sensory equipment for unmanned aircraft, 2D and 3D mapping and monitoring using unmanned systems, autonomous operation of unmanned aircraft, including collaborative systems, air traffic control of unmanned systems (Uspace), and the development of methods for processing data from unmanned systems, including real-time and online processing.

## Profese

- Researcher
- Researcher  in robotics
- Academic staff member
- HW/SW developer
- Researcher  in artificial intelligence area
- Programmer of systems based on Internet of Things concept in the industry
- Research and development
- Embedded systems SW developer
- Programmer and developer of systems based on Industry 4.0 concept
- Software developer
- Expert in data collection and distribution
- Control systems SW and HW developer
- Researcher
- Researcher  in measurement and testing systems
- Researcher  in embedded systems
- Research and development specialist

- Developer of SMART senzors systems
- Expert in science
- RαD engineer in the field of materials science
- Programmer and developer in the area of industrial processes digitization
- Control and automation  systems SW developer
- Data acquisition specialist
- Embedded systems HW developer
- Researcher  in industrial digitalization
- Academic staff member
- Rapid prototyping technology engineer
- Data scientist
- Automation systems specialist
- IT Developer
- Researcher in automation
- Developer of smart SMART sensor systems
- HW/SW developer
- Robotic systems designer
- Developer industry  4.0 application
- Research team leader
- Embedded systems SW and HW developer
- Developer of image analysis systems
- Research team leader in area of cybernetics (automation, embedded systems, robotics)
- Specialist in science, research and development
- Research and development
- Research and development specialist

## Uplatnění absolventa

The graduate of the doctoral study programme Unmanned Systems is prepared for independent scientific, research and university teaching professions in the studied field and related fields. He/she will thus find employment in institutions dealing with science, research, development and innovation, in companies with innovative potential, in international companies, in universities or as an independent entrepreneur.
Graduates will be able to work in:
- Design and construction of unmanned systems,
- development of control and communication systems, sensor equipment for unmanned systems,
- collection and processing of image and other data taken by unmanned vehicles,
- planning and implementation of projects using unmanned vehicles,
- managing project teams in the field.

## Cíle studia

The study programme Unmanned Systems is based on a multidisciplinary basis. The aim of the study is that graduates of all forms of study of this doctoral study programme will be prepared for application in development and research activities  in the field of the relevant focus, for solving highly demanding, unconventional and complex tasks in basic and applied research.

## Odborné znalosti absolventa

The graduate of the doctoral studies will have expert knowledge of the design and operation of unmanned systems, which are systematically developed and deepened in selected disciplines depending on the topic of the dissertation. These include in particular modelling, optimisation and design of unmanned systems, design and construction of control systems, communication devices and sensor equipment, autonomous operation of robotic systems, collection, processing and evaluation of data acquired by remote

methods.

## Odborné dovednosti absolventa

Professional skills enable the graduate of the doctoral studies to analyse the assigned tasks, to propose and evaluate alternative ways of their solution, to design and automate work procedures. They will be able to defend their solution proposals and translate them into a sequence of steps leading to their implementation. He/she is able to lead professional discussions, communicate with collaborators and principals, which enables him/her to hold a leading position in the solution team. Experience in solving new problems and applying the principles of scientific work enables him/her to acquire new professional knowledge, skills and competences. He is able to communicate in a foreign language about professional problems in the field. By actively presenting at professional conferences, he develops his abilities to present his own results, form judgements and communicate with the professional public. As part of his/her involvement in teaching by conducting exercises in professional subjects, the PhD student develops his/her pedagogical and communication skills, as well as the ability to further his/her education. The doctoral student acquires professional skills especially in the framework of analytical, developmental and experimental activities in research and cooperation projects with practice. He/she is able to independently design, evaluate and apply scientific procedures in the application areas of the dissertation topic.