# Bezpilotní systémy

Vygenerováno: 18. 5. 2025

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)	Elektrotechnika, Kybernetika, Vědy o zemi, Strojírenství, technologie a materiály, Stavebnictví
Klíčová slova	sběr a zpracování dat, dron, návrh a konstrukce, vývoj řídících, komunikačích a senzorických systémů, bezpilotní letadlo

## O studijním programu

The Unmanned Systems degree programme responds to the dynamically evolving market using these technologies in an increasingly wide 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 introduced to the operation of drones, including legislative aspects, and gain hands-on experience flying drones and capturing and processing imagery and other records. Depending on the choice of the dissertation topic, they deepen their theoretical and practical knowledge in necessary areas such as development of new materials and design of unmanned vehicles, development of sensor equipment for unmanned vehicles, 2D and 3D mapping and monitoring using unmanned systems, autonomous operation of unmanned vehicles including collaborative systems, flight control of unmanned systems (U-space), development of methods for processing data from unmanned systems including real-time and on-line processing.

#### Profese

- Embedded systems SW developer
- HW/SW developer
- Developer of image analysis systems
- Data acquisition specialist
- Researcher in automation
- Researcher in embedded systems
- Embedded systems SW and HW developer
- Software developer
- Academic staff member
- Programmer of systems based on Internet of Things concept in the industry
- Researcher in industrial digitalization
- Research team leader
- Control systems SW and HW developer
- Programmer and developer in the area of industrial processes digitization
- Expert in data collection and distribution
- Researcher
- Researcher in artificial intelligence area

- Robotic systems designer
- Research and development
- Academic staff member
- Expert in science
- Researcher in robotics
- Developer of SMART senzors systems
- Research and development specialist
- Research and development
- Developer industry 4.0 application
- Control and automation systems SW developer
- Data scientist
- Embedded systems HW developer
- Researcher in measurement and testing systems
- Specialist in science, research and development
- Automation systems specialist
- Research and development specialist
- Researcher
- IT Developer
- Developer of smart SMART sensor systems
- Rapid prototyping technology engineer
- Research team leader in area of cybernetics (automation, embedded systems, robotics)
- HW/SW developer
- Programmer and developer of systems based on Industry 4.0 concept
- $R\alpha D$  engineer in the field of materials science

### 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.

## Studijní plány

- forma prezenční (en)