

Study programme Mechatronics

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Faculty	Faculty of Mechanical Engineering
Type of study	Follow-up Master
Language of instruction	English
Code of the programme	N0714A270004
Title of the programme	Mechatronics
Regular period of the study	2 years
Cost	50,000 CZK per semester
Coordinating department	Department of Control Systems and Instrumentation
Coordinator	prof. Ing. Petr Noskievič, CSc.
Key words	

About study programme

Do you waver between mechanical or electrical engineering or IT? You don't have already!

Mechatronics, this is the up-to-date connection of the fine mechanics, electronics and intelligent computer control systems.

Each modern product can be practically called mechatronic system. You can find a job in mechanical or electrical engineering, robotics, biomedicine, and next related branches.

During the studies you learn to design, to test and also to control mechatronic systems, which scan the signals from the environment (temperature, position, velocity, pressure, sound, image etc.), are able to process them and transform into the control signal, which finally controls the for example the movement of the robot or production machine.

You will learn to design them as an advanced product characterized by the use of artificial intelligence, interactivity or autonomous behaviour.

Professions

- Academic staff member
- R&D engineer

Hard skills

- Industrial automation
- Basics of spectral analyses
- Work in MATLAB and Simulink
- Programming of industrial PLC applications
- SW - MATLAB/Simulink (creation of simulation models and system simulation)
- Programming of industrial PCs
- Control electronics (control systems with microprocessors)
- Measurement of electrical and non-electrical quantities
- Process simulation
- Knowledge of mathematical models

Graduate's employment

Interdisciplinary education is a great advantage for the future work of the graduates in different areas in mechanical and electrical engineering. The graduates can become the members of the project teams and are ready to start their professional career in research and development in engineering, automotive industry, IT and production of different kind.

Study aims

The goal of the study programme Mechatronics is to prepare the graduates for R&D activities in the field of Mechatronics, to be able to design mechatronic systems for the applications in different productions and for different technologies. The profile of the graduate involves the methods of the integrated design of the mechatronic system, that consists of mechanical subsystem, electrical subsystem, actuators and control system. The graduates know the methods of computer aided design, mathematical modelling and computer simulation as well as control systems design.

Graduate's knowledge

The graduates of the study programme Mechatronics have knowledge important for the design of mechatronic systems. They know a lot about automatic control systems, applied mechanics, electronics and microprocessor systems, measurements and signal processing.

They have experience with electrical, hydraulic and pneumatic drives and their control systems, next with measurements and sensors and diagnostic signal processing.

Graduate's skills

The graduates are able to analyse the dynamic properties of the complex structure systems and use the methods of mathematical-physical modelling and simulation of dynamic systems. They know, how to use the CAD software for design of mechatronic systems, control algorithms and software for data acquisition, monitoring and visualisation of technological processes. They are ready to design the measurement of important variables of the mechatronic system and to design the identification experiment of the dynamic properties of the controlled systems. Based on the dynamic analysis they are able to design the control system using PLC, industrial PC or embedded control systems.

Graduate's general competence

The knowledge from the electrical, mechanical and control systems makes possible to take into the account the complex structure of the mechatronic system and consider the interactions of different dynamic subsystems during the design phase of the new mechatronic system and using the suitable designed control system to achieve the desired dynamic properties of the final mechatronic system. The graduates are ready for the team work, to discuss technical problems with other specialized groups.