Slovak University of Technology in Bratislava
Institute of Robotics and Cybernetics

Faculty of Electrical Engineering and Information Technology
Academic year: 2025/2026
Reg. No.: FEI-104376-106226

MASTER THESIS TOPIC

Student:	**Bc. Radovan Jakubčík**
Student's ID:	106226
Study programme:	Robotics and Cybernetics
Study field:	Cybernetics
Thesis supervisor:	Ing. Marián Tárník, PhD.
Head of department:	prof. Ing. František Duchoň, PhD.
Workplace:	Institute of Robotics and Cybernetics

Topic: **Control System Synthesis**

Language of thesis: English

Specification of Assignment:

The objective of this diploma thesis is to design a comprehensive control system for a selected laboratory device representing a physical model of a dynamic system. The work will employ advanced methods of automatic control, with a particular focus on robust and adaptive control techniques.

Tasks:
1. Provide a detailed description of the selected technical device or process from the perspective of systems modeling and control. Define the input and output variables, characterize its static and dynamic properties, and assess the possibilities for its mathematical modeling.
2. Review and describe the control methods and algorithms that will be applied in the design of the control system.
3. Using simulation and analytical tools, demonstrate sample control results, including a relevant evaluation of control performance.
4. Address the practical aspects of implementing the proposed control algorithm using embedded microcontroller systems or programmable logic controllers (PLCs).
5. Evaluate the achieved results and prepare a written thesis documenting the solution of the assigned tasks.

Deadline for submission of Master thesis:	15. 05. 2026
Approval of assignment of Master thesis:	06. 11. 2025
Assignment of Master thesis approved by:	prof. Ing. Jarmila Pavlovičová, PhD. – Study programme supervisor