Dr. Ing. Cristina Muresan

Nr.crt.	Titlu lucrare	Scurta descriere	Cerinte	Nivel (licenta/master)
1	Validation of a novel IMC controller on a vertical take off and landing (VTOL) system https://www.ni.com/en-us/support/model.quanser-qnet-vtol-board-2-0-for-ni-elvis-ii-ii-.html	Study of the basic IMC method and the new version for improved disturbance rejection. Comparisons for a vertical take off and landing unit (Matlab simulation). Implementation and validation on the VTOL system. Analysis of results	System theory Matlab programming skills are required, excellent knowledge of CE 1 and 2.	Licenta/Master
2	Fractional order control of a two-rotor system http://www.inteco.com.pl/products/two-rotor-aerodynamical-system/	Study of 2-3 autotuning methods for fractional order (FO) controllers. Implementation of relay experiment to acquire necessary experimental data. Design of the FO-PID controllers. Experimental tests, analysis of results, comparisons with other methods.	System theory Matlab programming skills are required, excellent knowledge of CE 1 and 2.	Licenta/Master
3	Control of an active suspension system	System modelling in Simulink/Matlab. PID controller tuning, closed loop analysis of simulation results, comparison of results	System theory Matlab programming skills are required, excellent knowledge of CE 1 and 2. Papers dealing with similar topics: https://fluidas.ro/hervex/proceedings2017/pp.74-79.pdf https://e-university.tu-sofia.bg/e-conf/files/169/paper_10.47978@TUS.2020.70.03.017.pdf	Licenta

4	Advanced control of a two-rotor system http://www.inteco.com.pl/products/two-rotor-aerodynamical-system/	System identification, Study of 2-3 control methods, Design of the FO-PID controllers. Experimental tests, analysis of results, comparisons with other methods.	System theory Matlab programming skills are required, excellent knowledge of CE 1 and 2.	Licenta
5	Modelling and control of the hemodynamic system	Analysis of the hemodynamic system (MIMO system, interaction, pairing) – generalization of a nominal model to multiple patients, design of MIMO IMC controller, discrete-time implementation, Matlab simulation testing and validation, analysis of results	System theory Control engineering I/ II Matlab	Licenta/Master
6	Event-based control of the hemodynamic system	Analysis of the hemodynamic system (MIMO system, interaction, pairing) – generalization of a nominal model to multiple patients, design of MIMO IMC controller, discrete-time implementation, Matlab simulation testing and validation, analysis of results	System theory Control engineering I/ II Matlab	Licenta/Master
7	Modelling and fractional order control of the hemodynamic system – decentralised approach	Analysis of the hemodynamic system (MIMO system, interaction, pairing) – generalization of a nominal model to multiple patients, design of MIMO decentralised fractional order IMC controller, discrete-time implementation,	System theory Control engineering I/ II Matlab	Licenta/Master

		Matlab simulation testing and validation, analysis of results		
8	Multivariable control in pharma	Analysis of pharma process, design of MIMO decentralised and decoupled control strategies, discrete-time implementation, Matlab simulation testing and validation, analysis of results	System theory Control engineering I/ II Matlab	Licenta/Master