Name: **System Theory**		NEPTUN-code: *NIXRE1EBNE*	Number of periods/week: full-time: 2 lec + 1 sem + 0 lab
Credit: 5 Requirement: exam		Prerequisite: *NMXAN2EBNE* Calculus II	
Responsible: Levente Adalbert KOVÁCS, Ph.D.	Position: professor, habil.	Faculty and Institute name: John von Neumann Faculty of Informatics Institute of Biomatics	

Way of assessment:
- submission of homework assignment

Competences

Course description:
The students will get acquainted with the basics of system theory. The main topic of the course is the description and analysis of systems with linear dynamics. The course gives an overview of the description of linear systems in time domain, frequency domain and complex frequency domain along with the connection among these descriptions and paying special attention to their applications. The fundamental tools of system theory are discussed that can be used to analyze the equilibrium and stability of systems, the quality of the transients of the system, and the result of the connection of different systems. In the second half of the semester, the description of discrete-time systems is discussed in time and frequency domains. Students will become familiar with the fundamentals and applications of sampling. After finishing the course, the students will have sufficient knowledge for analyzing dynamical systems, and they will have the fundamentals for control engineering studies. The theory learned in the lectures is illustrated with the practical examples in the seminars.

Literature
Béla Lantos: System Theory and Planning I., Single Variable Regulations. Akadémia Kiadó, 2nd edition, 2005 (in Hungarian) William S. Levine: William S. Levine: The Control Handbook, CRC Press, 2010 (electronic notes)