<table>
<tr><td colspan="2">Name:
System- and Control Theory</td><td>NEPTUN-code:
NBXRI1EMNE</td><td>Number of periods/week:
full-time: 2 lec + 0 sem + 2 lab</td></tr>
<tr><td colspan="2">Credit: 6
Requirement: exam</td><td colspan="2">Prerequisite:
-</td></tr>
<tr><td>Responsible:
Levente KOVÁCS, Ph.D.</td><td>Position:
professor, habil.</td><td colspan="2">Faculty and Institute name:
John von Neumann Faculty of Informatics
Institute of Biomatics</td></tr>
<tr><td colspan="4">Way of assessment:
– regular homeworks
– written exam</td></tr>
<tr><td colspan="4">Competences</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Course description:</td></tr>
<tr><td colspan="4">After a short rehearsal of the fundamentals of system theory and classical control engineering, the students will get acquainted with several methodologies from modern control theory. First, the fundamentals of state-space control are discussed (controllability, pole placement), which is followed by state-space controller design techniques extended with constant set point tracking, state part-timemation and compensation of disturbance in the input signal (load part-timemation). Then the optimal versions of the state-space controller design methodologies are discussed (LQ regulators, minimax control, Kalman-filters). In the second part of the semester, the students will learn the theory of robust control and become familiar with the methodology of H∞ synthesis. The course will end with the discussion of the discrete-time implementation of the controllers learned in the semester. After the course, the students will be able to use the tools of modern control theory in practice, and control systems that are critical or require high precision.</td></tr>
<tr><td colspan="4">Literature</td></tr>
<tr><td colspan="4">Béla Lantos: Theory and Design of Systems Control II, Akadémiai Kiadó, 2003 (in Hungarian)
József Bokor, Péter Gáspár: Control systems with vehicle applications, Typotex Kiadó, 2008 (in Hungarian)
Kemin Zhou, John C. Doyle, Keith Glover: Robust and Optimal Control, Pearson; 1 edition, 1995 (electronic notes)</td></tr>
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