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| **Title of the course:****Open and Closed loop Control** | **NEPTUN-code:**RKXSV1EBNF | **Weekly teaching hours:** l+cw+lw1+0+2 | **Credit:** 4**Exam type:**  tm  |
| **Course leader:**Lóránt Szabó, Ph.D. | **Position:** senior lecturer | **Required preliminary knowledge:** - |
| ***Curriculum:*** |
| Learning the basic concept of the open and closed loop control. The open loop control using only On/Off signals. Overview PLC systems. Open loop control with pneumatic final elements.Review the theoretical background of closed loop control, structure of a control system, signals and basic control blocs. Time response, frequency response, steady state characteristics.  |
| ***Curriculum Description:*** |
| **Week** | **Topic of lectures and practices** |
| 1.2025.02.20 | Logical networks - building blocks |
| 2.2025.02.27. | Combinational networks |
| 3.2025.03.06. | Combinational networksSequential networks |
| 4.2025.03.13. | Sequential networksHomework No. 1. giveout |
| 5.2025.03.20. | Relays, basic relay circuitsProgrammable logic controllersHomework No. 1. deadline |
| 6.2025.03.27. | Programmable logic controllers |
| 7.2025.04.03. | 1st Mid-term |
| 8.2025.04.10. | Programmable logic controllersHomework No. 2. giveout |
| 9.2025.04.17. | Rector’s break |
| 10.2025.04.24. | Rector’s break |
| 11.2024.05.01. | Labour’s DayHomework No. 2. deadline |
| 12.2025.05.08. | Electro-pneumatic systems |
| 13.2025.05.15. | 2nd Mid-term |
| 14.2025.05.22. | Retake |

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| ***Mid-term requirements:*** |
| *Attendance:*Compulsory |
| *Midterms, lab reports, etc.:*Completion of 2 (theory practice in one) midterm at least at a sufficient level.Dissemination of the homeworks, and pass with sufficient points.Completion of the micro-tests at the beginning of the exercises with a minimum of 3 points. |
| *The method of obtaining a signature / mid-term mark:*Basis of marking: attendance at lectures and laboratory works/practice.Written tests min. = 2 (pass) (separately).In case of mid-semester mark fail (1), correction opportunities are available according to the Student Requirements System of Óbuda University.  |
| ***Professional competencies:*** |
| * In possession of state-of-the-art IT skills, being able to use professional databases and certain design, modelling, and simulation software depending on their specialty.
* Efforts to improve knowledge by on-going self-education and continuously update their knowledge of the world.
* Responsible proclamation and representation of the value system of the engineering profession; openness to professionally well-founded critical remarks.
* Sharing experiences with colleagues, thus promoting their development.
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| ***Literature:*** |
| 1. Javad, Mohammadpour: Control of Linear Parameter Varying systems. Chapter: 1, 2, 3; ISBN: 978-1-4674-1832
2. Keviczky, László: Control Engineering, Chapter: 1, 2, 4, 6, 8; ISBN: 978-963-9819-74-0
3. E-learning materials in Moodle (lectures)
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