UNIVERSITATEA DIN ORADEA FACULTATEA DE INGINERIE ELECTRICĂ ȘI TEHNOLOGIA INFORMAȚIEI adea, Str. Universității nr.1, ORADEA, cod 410087, Tel.: 0259-408104, 0259-408204, Fax: 0259-408412

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Topics and bibliography for the contest for Professor, position 3, Department of Control Systems Engineering and Management, 2016-2017 academic year

Process Interfaces

- 1. Numerical Processing Systems
- 2. Introduction to LabVIEW applications development environment
- 3. LabVIEW configuration utility: MAX (Measurement and Automation eXplorer)
- 4. The structure of process interfaces
- 5. Classifying modes of coupling process interfaces to a PC
- 6. PCI bus and PCI Express
- 7. The USB Port
- 8. Lab VIEW VISA functions
- 9. The PC parallel port
- 10. The GPIB interface

Bibliography

[1] A. Pavel, Process interfaces, Electronic course notes

[2] L. Toma, Acquisition Systems and Digital Signal Processing, West Publishing House, Timisoara, 1997

[3] C. Şorândaru, Virtual Instrumentation in Electrical Engineering, Orizonturi universtare Publishing House, Timisoara, 2003

[4] T. Ozkul, *Data Aquisition and Process Control Using Personal Computers*, Marcel Dekker Inc., Teknomed Engineering, Istanbul, Turkey, 1996

[5] *** LabVIEW Fundamentals Manual August 2007 National Instruments

Control of industrial robots

- 1. Industrial robots in manufacturing systems
- 2. Parallel industrial robots
- 3. The geometric design of an industrial robot
- 4. Homogeneous transformation and Denawit-Hartenberg convention
- 5. The structure software system for industrial robots
- 6. The control of robots in the manual mode

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- 7. Programming at the processing level or at the end-effector level
- 8. Instructions for defining the movement at end-effector level for I. R.
- 9. Commands for execution in real time
- 10.Generating the trajectory of robots

Bibliography

[1] Borangiu T., A. Dumitrache, D. Anton, Programming Robots, A.G.I.R. Publisher, 2010

[2] Dragulescu, D., *Robots Dynamics*. Didactic and Pedagogical Publishing House, Bucharest, 1997

[3] Matica, LM, *The Management of Industrial Robots*. Oradea University Publishing House, 2008, ISBN 978-973-759-481-5

[4] Matica, LM, Kovendi, Z. *Programming the Movement of Industrial Robots*. Oradea University Publishing House, 2010, ISBN 978-606-10-0082-1

<u>Robots</u>

- 1. Stationary robots. Commercial robots
- 2. Mobile Robots. Automated guided vehicles
- 3. Classification of industrial robots
- 4. The structuring of the control system and of the operation system
- 5. The inverse geometric model of the trajectory generating mechanism
- 6. The reverse geometric orientation mechanism
- 7. Basic management methods. Classification
- 8. Management methods in c.c.c. coordinates
- 9. Management in Cartesian coordinates. Principles
- 10. The structure of robotic flexible manufacturing cells

Bibliography

[1] Lăcrămioara Stoicu -Tivadar, Programming Industrial Robots and Machine Tools with Numerical Control - course, "Politehnica" University of Timisoara, 1996

[2] Fr., Kovács, C. Radulescu, Industrial Robots, Technical University of Timisoara 1992 [2]

[3] T. Barabas, T., Vesselenyi, *Robotics - The management and programming of industrial robots - Problems and basic methods*, University of Oradea Publishing House, 2004

[4] T., Vesselenyi, T., Barabas, *The management of robots. Applications*, University of Oradea Publishing House, 2006

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