SYLLABUS

1. Course title:

Automation and regulation of fluid systems

2. Code:

3. Cycle of study:

1

4. ECTS credits:

3

5. Type of course:

○ Mandatory ◉ Elective

6. Prerequisites:

7. Class restrictions:

8. Duration / semester:

1 8

9. Weekly contact hours:

9.1. Lectures: 2

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Mechatronic / Mechatonic

12. Lecturer:

dr.sc. Almir Osmanović, Assistant Professor

13. Lecturer's e-mail:

almir.osmanovic@untz.ba

14. Web site:

www.mf.untz.ba

15. Course aims:

Introducing students with different techniques for analysis and regulation of modern control systems for different fluid systems (pneumatic and hydraulic). Getting to know the basics of the servo system with an emphasis on applications in the mechatronics.

16. Learning outcomes:

At the end of the semester, successful students, who continued to perform their duties throughout the lecture period, will be able to: effectively use the contents of this subject in regulating fluid systems as well as application/used these systems in a mechatronics.

17. Course content:

Introduction, application of hydraulic and pneumatic systems in mechatronics. Basic principles of hydraulic actuators control. General principles for design hydraulic systems. Selection of basic parameters for hydraulic systems. Design of open and closed hydraulic systems. Connection of executive elements in hydraulic systems. Methods for automatization and regulation of hydraulic systems. Representation of hydraulic systems and their realization. General principles for designing pneumatic systems. Basic principles for control pneumatic actuators. Examples of pneumatic systems and their realization for achieving different functional requirements. Principles of pneumatic systems control. Methods of automation and regulation of pneumatic systems. Errors and disturbances in hydraulic and pneumatic systems. Methods for eliminating disturbances. Component maintenance (Installation of equipment, finding faults, safety rules). Practical examples of pneumatic systems.

18. Learning methods:

Lectures - theoretical lectures, active two-way communication student professor, mandatory attendance of students.
Laboratory exercises - laboratory work, acquisition of practical skills related to subject matter of the subject, active two - way communication student - assistant, mandatory attendance of exercises.
Written exam (from the theoretical part).
Assignments, project paper - independent work of a student to solve the problem.

19. Assessment methods:

Defending Assignments, project paper works - student defends his / her work in front of the professor / assistant - answers the questions asked.
Written exam (from the theoretical part) - student solves questions / tasks in the given time period related to the subject of study.
Laboratory Exercise Report - Submission of reports on activities related to the realization of certain laboratory exercises, answering questions asked by the Assistant.
Final Exam - oral answer to the questions asked by professors.
Corrective Exam (Written examination) - solving questions / tasks in a given time period related to the subject of study.
Corrective Exam (oral examination) - answer the questions asked by professors.

20. Assessment components:

Evaluation will be based on the following activities:
Assignments, project paper (2 x 15) - 30 points
Theoretical part of exam (2 x 20) - 40 points
Final (oral) exam - 30 points
Total: 100 points

21. Required reading list:

Walters R.B., 1991. Hydraulic and Electro-Hydraulic Control Systems. Berlin: Springer.
Callear B. J., Pinches M.J., 1996. Power pneumatics. New Jersey: Prentice Hall.
Boras B., 1991. Mehanizirane naprave i uređaji. Zagreb: Fakultet strojarstva.

22. Web sources:

23. Applicable starting from the academic year:

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015