

SYLLABUS

1. Course title:

Oil hydraulics and pneumatics

2. Code:**3. Cycle of study:****4. ECTS credits:****5. Type of course:** Mandatory Elective**6. Prerequisites:****7. Class restrictions:****8. Duration / semester:****9. Weekly contact hours:**

9.1. Lectures:

3

9.2. Seminars:

1

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 hydraulics and pneumatics, hydraulic and pneumatic elements and connecting components to more complex systems. The student becomes acquainted with the principles of work of the basic hydraulic and pneumatic components, which have to perform certain predefined functions. The student needs to be able to lead, design and maintain these systems.

16. Learning outcomes:

The object learning outcomes are to enable students to work independently with pneumatic and hydraulic components. Competencies that the student has after passing the exam: Drawing and work on project documentation for hydraulic and pneumatic system, specify and select the required elements / components according to the drawing scheme, connect the selected components according for the system work. Detect faults on the equipment and replace damaged components.

17. Course content:

Introduction to hydraulics and pneumatic. Physical basics of hydraulics and pneumatics. Elements for energy transformation. Hydrostatic and hydrodynamic. Hydraulic fluids. Hydraulic pumps and hydraulic motors. Hydraulic pump capacity control, pressure regulator and power. Hydraulic Cylinders. Hydraulic accumulators. Control elements. Distributing valves, pressure and flow valves. Proportional and servo-technology in hydraulics. Design and control of the open circuit. Closed Circuit control. Auxiliary elements (tanks, filters, pipelines, connector elements..). Cooling and heating devices. Hydrostatic transmissions. Construction and design of hydrostatic power transmitters. Maintenance of hydraulic systems. Compressed air preparation and distribution. Pneumatic elements. Pneumatic motors. Pneumatic distributors. Pneumatic control. Pneumatic servo systems.

18. Learning methods:

Lectures, auditorial and laboratory exercises. Written and oral knowledge testing, assignments, project paper / graphic works and consultations.

19. Assessment methods:

Defending assignments, project paper/ graphic works - student defends his / her work in front of the professor / assistant - answers the questions asked.

Written exam (from the theoretical part and the tasks) - student solves questions / tasks in a given time period related to the subject of study.

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:

Written examination (1 x 15) - 15 points

Theoretical part of exam (2 x 20) - 40 points

Final (oral) exam - 35 points

Assignments, project paper - 10 points

Total: 100 points

21. Required reading list:

Watton, J., 2009. Fundamentals of Fluid Power Control. Cambridge : Cambridge University Press.

Savic, V., 1991. Uljna hidraulika I. Zenica: Dom štampa Zenica.

Nikolić, G., 1990. Pneumatsko upravljanje. Zagreb: Fakultet strojarstva i brodogradnje.

22. Web sources:**23. Applicable starting from the academic year:**

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015