

SYLLABUS

1. Course title:

Oil hydraulics and pneumatics 2

2. Code:

3. Cycle of study:

4. ECTS credits:

5. Type of course:

6. Prerequisites:

7. Class restrictions:

8. Duration / semester(s):

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)
	<input style="width: 40px; height: 20px;" type="text" value="1"/>	<input style="width: 40px; height: 20px;" type="text"/>		
9.1. Lectures	<input style="width: 40px; height: 20px;" type="text" value="3"/>	<input style="width: 40px; height: 20px;" type="text"/>	Classes:	<input style="width: 40px; height: 20px;" type="text" value="56,25"/>
9.2. Seminars	<input style="width: 40px; height: 20px;" type="text" value="1"/>	<input style="width: 40px; height: 20px;" type="text"/>	Individual work:	<input style="width: 40px; height: 20px;" type="text" value="99,17"/>
9.3. Laboratory / Practice classes	<input style="width: 40px; height: 20px;" type="text" value="1"/>	<input style="width: 40px; height: 20px;" type="text"/>	In total:	<input style="width: 40px; height: 20px;" type="text" value="155,4"/>

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Mechatronic

12. Lecturer:

Ph.D. Almir Osmanović, Associate professor

13. Course aims:

Introducing students with the basics and application of electrohydraulics and electropneumatics.

14. Learning outcomes:

After successfully completing the course, the student will be able to:

Application of electrohydraulics in mechatronic systems.

- Analyze electrohydraulic and proportional components and systems.
- Design hydraulic and electrohydraulic systems.
- Analyze the operation of electrohydraulic systems.
- Automate and simulate automated systems using hydraulic and electrohydraulic components.

Application of electropneumatics in mechatronic systems.

- Analyze electropneumatic components and systems.
- Design pneumatic and electropneumatic systems.
- Analyze the operation of electropneumatic systems.
- Automate and simulate automated systems using pneumatic and electropneumatic components.

15. Course content:

1. Application of hydraulic and pneumatic components and systems in mechatronics.
2. Fundamentals of hydraulic circuits.
3. Hydraulic actuators.
4. Control of hydraulic actuators.
5. Electrohydraulic control systems.
6. Electrohydraulic control systems.
7. First test
8. Fundamentals of pneumatic circuits.
9. Pneumatic actuators.
10. Control of pneumatic actuators.
11. Control of pneumatic actuators.
12. Introduction to electropneumatics.
13. Electropneumatic control systems.
14. Electropneumatic control systems.
15. Second test.

16. Learning methods:

Lectures – Lectures present the theoretical part of the material, accompanied by examples to facilitate understanding of the material. Lectures using multimedia tools, active learning techniques and active student participation and discussions. Practical examples are worked on in auditory and laboratory exercises, while acquiring practical skills related to the topic of the subject being studied, active learning techniques and active student participation and discussions.

Consultations represent an individual or group form of support for students, where they have the opportunity to ask additional questions, clarify ambiguities and receive specific guidelines regarding the course material and assignments. Consultations with teachers on a weekly basis.

Part of the teaching can also be organized through "distance learning", which is more closely regulated by the decision of the Senate

17. Assessment methods:

Attendance at all classes is mandatory and a record is kept of it, on the basis of which the student receives a signature from the subject teacher after each semester. Due to illness or other justified reasons, a student may miss a maximum of 20% of classes.

A student has the right to take each individual knowledge assessment. After half of the semester, students take a written test (1 partial exam - test tasks) that covers the topics covered in the exercises so far. All students in the course take the test at the same time, which achieves uniformity in the level of knowledge being tested, as well as the conditions under which the student takes the exam. The test consists of tasks. On 1 test, a student can achieve a maximum of 15 points, and in order to pass the test, they must achieve a minimum of 50% of the points. A student who has not passed the exam can take the exam again on the following test dates. Students take the second test (2 partial exams - test tasks) at the end of the semester. On 2 tests, a student can achieve a maximum of 15 points, and in order to pass the test, they must achieve a minimum of 50% of the points. At the end of the semester, students take a theory test, which consists of multiple-choice, simple recall, or essay questions. Students can earn a maximum of 35 points on the test. As part of their pre-exam requirements, students are required to write individual or group seminar papers on a given topic. Seminar papers are submitted in writing to the course assistant and teacher, and then presented orally. Students can earn 0-25 points for completed and presented seminar papers.

The final exam is oral. In the oral exam, students answer questions drawn from the subject matter covered in lectures and exercises. The oral exam can be passed if the student answers all questions correctly. The maximum number of points on the oral exam is 10.

In order to pass the course, students must earn a minimum of 54 cumulative points.

Grading system: $(25)+(30)+(35)+(10)=100$

Grade	described	by letter	points
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5 (five)	Does not meet minimum criteria	F;FX	<54
6 (six)	meets the minimum criteria	E	54 -64
7 (seven)	Generally good, but with significant flaws	D	65-74
8 (eight)	Average, with noticeable errors	C	75-84
9 (nine)	Above average, with some errors	B	85-94
10 (ten)	Exceptional success without mistakes or with minor mistakes	A	95-100

18. Assessment components:

Grading will be based on the following activities:

PRE-EXAM OBLIGATIONS (total points):	90
Active participation during classes - seminar papers	25
Tests - assignments (2 x 15 points)	30
Test - theory (35 points)	35
FINAL EXAM (total points):	10
TOTAL:	100

19. Mandatory reading list:

1. G. Prede, D. Scholz (2010). Electropneumatics. Festo Didactic GmbH & Co
2. D. Merkle, K. Rupp, D. Scholz (2010). Electrohydraulics. Festo Didactic GmbH & Co

20. Additional reading list:

1. D. Šešlija (2020). Implementacija automatskih sistema: Pneumatski sistemi. Novi Sad: FTN.

21. Web sources:

<https://tu-dresden.de/ing/maschinenwesen/imd/fms/studium>

22. Applicable from the academic year:

2025/2026

23. Adopted in the Faculty/Academy session: