SYLLABUS

1. Course title:

Mechanical and hydromechanical operations

2. Code:

3. Cycle of study:

1

4. ECTS credits:

3

5. Type of course:

Elective

6. Prerequisites:

7. Class restrictions:

8. Duration / semester(s):

I **V**

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2) (for two-semester courses)		Workload: (hours)
9.1. Lectures	2		Classes:	33,75
9.2. Seminars	1		Individual work:	55,97
9.3. Laboratory / Practice classes	0		In total:	89,72

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

ETFI

12. Lecturer:

dr.sci. Izet Alić, professor

13. Course aims:

Acquisition of basic knowledge of mechanical and hydromechanical operations and processes aimed at their application. Develop aptitudes for assessment, the basics of budgeting (dimensioning), and the selection of individual elements and devices applicable in the professional field of activity.

14. Learning outcomes:

- recognize and name key devices, circuits and machines in the process of mechanical and hydromechanical operations and transportation of crushed solid materials;
- apply your knowledge in solving practical tasks on examples of individual devices and installation assemblies;
- distinguish types and methods of mechanical and hydromechanical operations and propose more effective procedures in certain cases of practice;
- operate devices during the transport of crushed particles using gaseous and liquid media.

15. Course content:

1. Introduction to the course and definitions of basic terms: size and shape of particles, structures of coarsely dispersed systems,equivalent diameters and sphericity of particles.
2. Division of mechanical operations. Particle separation operations. Shredding. Shredding devices - application.
3. Deposition of particles. Precipitators. Practical examples.
4. Mixing and separation of dispersed systems. Types of mixers. Kneading.
5. Centrifugation.
6. Cyclone separators.
7. Granulation of solid particles. Briquetting and pelletizing.
8. Test
9. Fluidized bed of particles, basic terms. Fluidization.
10. Equipment in systems of mechanical operations (screw conveyors-dosers).
11. Storage of particles of solid substances.
12. Pneumatic transport. Constituent elements, assemblies and devices.
13. Influencing parameters, flow rate, pipelines, calculation of pressure drop, application. Practical examples.
14. Hydraulic transport. Purpose and basic parts.
15. Mixture flow rates, pressure drop. Practical examples.

16. Learning methods:

Lectures and exercises with the use of multimedia tools, active learning techniques and with the active participation and discussions of students. Preparation and presentation of group and individual seminar papers. In addition, students have the opportunity to consult with the subject teacher and assistant.

17. Assessment methods:

After half of the semester, students take a written test that covers the topics covered up to that point from lectures and exercises. The test consists of theoretical questions. A student can score a maximum of 30 points on the test. It is necessary to achieve a minimum of 50% of points. At the final exam, the student first takes a written test if he did not pass it during the semester. As part of the pre-examination requirements, students are required to create an individual or group seminar paper that will cover a certain topic from the content of the course. The seminar paper is submitted in written form to the subject teacher for review and evaluation, and then it is presented orally. A student can obtain a maximum of 30 points for the completed and presented seminar work. Also, for regular attendance and continuous activity at lectures and exercises throughout the semester, a student can earn from 0 to 5 points.The final exam is oral from the part that is not included in the test. The maximum number of points that a student can obtain in the oral exam is 35. At the same time, it is necessary to obtain a minimum of 30% of points (10.5 points) in order to be able to receive a passing grade (if this is sufficient in addition to the points from the pre-examination requirements).The grade is formed according to the number of accumulated points, and according to Article 107 of the Law on Higher Education TK.

Grade	Described	Letter	Points
5 (five)	Does not meet minimum criteria	F, FX	<54
6 (six)	Meets minimum criteria	E	54-64
7 (seven)	Generally good, but with significant shortcomings	D	65-74
8 (eight)	Average, with noticeable errors	C	75-84
9 (nine)	Above average, with occasional errors	B	85-94
10 (ten)	Exceptional achievement with no errors or with minor errors	A	95-100

18. Assessment components:

Attendance continues 5 points
- Seminar work during the semester 30 points
- Test 30 points

Pre-exam requirements total 65 points
Final exam = 35 points

19. Mandatory reading list:

1. Koharić, V.: Mehaničke operacije, FSB, Zagreb, 1996;
2. Čikić, A.; Kondić, Ž.: Osnove mehaničkih operacija – praktični primjeri, Visoka tehnička škola u Bjelovaru, 2014

20. Additional reading list:

1. E. Džaferović, H. Hadžiahmetović: Pneumatski transport

21. Web sources:

22. Applicable from the academic year:

2023/2024

23. Adopted in the Faculty/Academy session:

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