SYLLABUS

1. Course title:

MINING VENTILATION AND AEROLOGY

2. Code:

LRUDRVA

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

Mandatory

6. Prerequisites:

No

7. Class restrictions:

No

8. Duration / semester(s):

1 8

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)	
9.1. Lectures	4		Classes:	56,25	
9.2. Seminars	0		Individual work:	95,00	
9.3. Laboratory / Practice classes	1		In total:	151,25	

10. Faculty:

Mining, Geology and Civil Engineering

11. Department/study program:

Mining Engineering

12. Lecturer:

PhD Edin Delić Full Professor

13. Course aims:

Introducing students to the basics of fluid mechanics, climatology, and aerology, and their application in the working environment. Introducing students to the basics of fluid mechanics, climatology, and aerology, and their application in the mining work environment.

- **Improving skills in applying acquired knowledge to solve various fluid-related problems in mining.**
- **Enhancing communication skills in both written and verbal forms.**
- **Improving skills related to individual and team/group work.**
- **Developing students' logical engineering thinking skills.**

14. Learning outcomes:

At the end of the semester/course, successful students who have continuously fulfilled their obligations throughout the entire instructional period will be able to:

- **Utilize available literature to solve various problems in the field of mine ventilation and aerology.**
- **Solve problems of varying complexity, both individually and in teams, and present them in written or verbal form.**
- **Understand the importance of this course in addressing various issues related to mine ventilation planning, safety, and protection.**
- **Pass the final exam in the first exam sessions at the end of the semester.**

15. Course content:

Air, atmospheric composition, and gases in mines; Measurement and control of ventilation and air conditioning; Mine climate; Required air quantities; Laws of mine aerodynamics, natural potential, and fans.
Analysis of ventilation networks; Aerodynamic resistance of mine workings; Separate ventilation; Air distribution and losses; Computational Fluid Dynamics (CFD) in mine ventilation; Ventilation of tunnels and large-profile spaces.
Mine gas dynamics; Fires and explosions in mines; Ventilation design; Aerology of surface mines.

16. Learning methods:

The primary learning methods include lectures, team/group projects/assignments (seminar papers), and short tests covering the core material of specific topics or teaching units.
Continuous participation in lectures throughout the semester, engagement in thematic discussions, initiative, and other activities that contribute to improving the quality of teaching will be rewarded with additional points in the final grade, with records maintained by the course instructor.
Completion of individual and team projects is mandatory. During the semester, students will be required to complete at least one team project.
At the end of specific course topics, the instructor will organize tests or mini-exams consisting of a set number of questions and tasks to assess students' acquired knowledge. The test schedule will be announced to students at least seven days in advance to allow for adequate preparation. Questions on quick tests will cover the most recently completed topic or teaching unit.

17. Assessment methods:

nowledge assessment methods include both written and oral evaluations. The student grading criteria include:

1. **Attendance and participation in lectures**
2. **Written/calculative exam – Test**
3. **Written/theoretical exam – Test**
4. **Individual/group projects/seminar paper**

Written methods include knowledge assessment through quick tests after completing specific course topics.
Written exams consist of separate evaluations: one focusing on problem-solving and calculations, and the other assessing theoretical knowledge of the completed topics.
The oral assessment includes the defense of the team project through a presentation and other forms of verbal communication in an interactive setting.

18. Assessment components:

Half of the total points (50) are earned during the course and consist of:

- **Attendance and participation in lectures: up to 10 points**
- **Seminar papers, teamwork projects, essays: up to 30 points**
- **Tests: up to 10 points**

The total number of pre-exam obligations amounts to 50 points.
The final exam is taken after attending the course, at scheduled times. The maximum number of points that can be earned on the final exam is 50.
The final student performance, after all forms of knowledge assessment, is graded using a system comparable to the ECTS grading scale as follows:
a) 10 (A) - outstanding performance with no or minimal errors, 95-100 points
b) 9 (B) - above average, with some errors, 85-94 points
c) 8 (C) - average, with noticeable errors, 75-84 points
d) 7 (D) - generally good, but with significant shortcomings, 65-74 points
e) 6 (E) - meets minimum criteria, 54-64 points
f) 5 (F, FX) - does not meet minimum criteria, below 54 points

19. Mandatory reading list:

1. V.Jovičić, Ventilacija rudnika, RGF Beograd (više izdanja)
2. A.Bašić, Rudnički ventilacioni sistemu,
3. E.Teply, Ventilacija Rudnika
4. McPherson, M.J., Subsurface Ventilation and Environ-mental Engineering. Chapman & Hall, 1993
5. E. Delić, A. Bašić, R. Šišić, Mehanika fluida, klimatologija i aerologija, Univerzitet u Tuzli, 2008.

20. Additional reading list:

21. Web sources:

http://web.mst.edu/~tien/218/218-VentHistory.pdf
http://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/bul589.pdf
http://technology.infomine.com/reviews/ventilation/
http://www.ventsim.com/
https://en.wikipedia.org/wiki/Underground_mine_ventilation

22. Applicable from the academic year:

2025/26.

23. Adopted in the Faculty/Academy session: