

## SYLLABUS

**1. Course title:**

CONSTRUCTION OF MINING FACILITIES

**2. Code:**

LRUDIRO

**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

4

**9. Weekly contact hours and student workload:**

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)
9.1. Lectures	3			Classes: 56,25
9.2. Seminars	1			Individual work: 100,0
9.3. Laboratory / Practice classes	1			In total: 156,25

**10. Faculty:**

Mining, Geology and Civil Engineering

**11. Department/study program:**

Mining Engineering

**12. Lecturer:**

PhD Kemal Gutić, Full Professor

**13. Course aims:**

Introduce students to the construction of mining structures;  
 • Based on theoretical foundations and practical examples, students should understand, analyze, and apply the acquired knowledge in solving specific problems related to the opening of mines and the construction of underground facilities;

- Improve communication skills in both written and verbal forms, while also practically acquiring skills and competencies;
- Enhance students' continuous work throughout the year, ensuring they actively participate in all teaching activities and responsibilities from the beginning of the course;
- Establish two-way communication between students and instructors.

#### 14. Learning outcomes:

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

- Use available literature related to solving various problems in this course;
- Solve problems of varying complexity individually or in teams and present them in written or verbal form;
- Understand the significance of this course in solving different problems in practice;
- Pass the final exam in the first available exam sessions at the end of the semester.

#### 15. Course content:

**Introduction: Presentation of the Course Syllabus for Underground Mining Structures Construction**  
The course "Underground Mining Structures Construction" aims to provide students with comprehensive knowledge and skills for understanding the design, construction, and monitoring of underground mining structures. The course will cover various aspects, including theory and practical methods, with a focus on applying this knowledge in solving engineering challenges related to underground mining operations.

**Course Content:**  
Literature and resources for the course.  
Overview of the course content.  
Course objectives and expected outcomes.  
Expectations for communication at the end of the course.  
Teaching methods and evaluation procedures.  
Additional information for course success.

**Key Topics in the Course:**  
**Blasting-Free Work Environment:** Understanding the techniques and methods for creating mining structures without the use of explosives.  
**Mechanization for Mining Structure Construction:** An overview of the machinery and tools used in the construction of mining facilities.  
**Construction of Mining Structures:**  
Primary geostatic equilibrium state treated from a geomechanical and thermodynamic perspective of rock mass physical state.  
Secondary stress state in mining structures.  
Determination of underground pressures based on existing theories.  
Underground pressures and theories for calculating pressure in underground rooms.  
Classical methods of determining underground pressures.  
Analysis of the system "substructure – rock mass" in the construction of mining structures.  
**Software Application for Designing Underground Mining Structures:** Use of software tools for dimensioning and designing underground mining structures.  
**Substructure Dimensioning:**  
Wood, steel substructures.  
Concrete, anchors.  
Dimensioning construction of substructures.  
Methodologies for dimensioning wood, brick, concrete, reinforced concrete, steel arches, and anchoring systems.  
**Special Methods for Underground Mining Structure Construction:** Application of advanced techniques for the construction of underground mining structures.  
**Construction of Vertical, Inclined, and Horizontal Mining Structures.**  
**Monitoring the Construction of Mining Structures:** Methods for tracking and evaluating the progress and quality of underground mining structure construction.  
**Teaching Methods:** The course will be delivered through a combination of lectures, practical exercises, and case studies. The teaching approach will be interactive and hands-on, with an emphasis on problem-solving and real-world applications in the construction of underground mining structures.  
**Assessment Methods:**  
Active participation in lectures and exercises.  
Individual and group projects.  
Tests and assignments.  
Final exam.  
By the end of the course, students will have the knowledge and skills to apply theoretical concepts to practical problems in underground mining structure construction. They will also be able to communicate effectively both verbally and in writing, and collaborate in team-based environments to solve engineering challenges.

#### 16. Learning methods:

In order to efficiently conduct the course and achieve the expected learning outcomes and student competencies by the

end of the semester, various teaching methods will be employed, including:

- Lectures
- Laboratory (field) exercises
- Team/group projects (seminar papers)
- Short tests covering the core material by topics or teaching units

These methods aim to enhance students' understanding, practical skills, and ability to apply theoretical knowledge in solving engineering problems related to the course content.

#### 17. Assessment methods:

The methods of evaluating students include the following criteria:

1. Attendance and participation in lectures and exercises
2. Individual project/program (seminar paper)
3. Final exam

These evaluation methods are designed to assess students' understanding, practical skills, and overall engagement throughout the course.

#### 18. Assessment components:

##### Criteria Points

- Activity 4
- First partial exam 20
- Second partial exam 20
- Seminar paper 6
- Pre-exam obligations 50
- Final exam 50
- Total 100

The final success of the student after all forms of knowledge assessment is evaluated and graded using a system comparable to the ECTS grading scale as follows:

- a) 10 (A) - excellent performance with no or minor mistakes, carries 95-100 points;
- b) 9 (B) - above average, with a few mistakes, carries 85-94 points;
- c) 8 (C) - average, with noticeable mistakes, carries 75-84 points;
- d) 7 (D) - generally good, but with significant shortcomings, carries 65-74 points;
- e) 6 (E) - meets the minimum criteria, carries 54-64 points;
- f) 5 (F, FX) - does not meet the minimum criteria, less than 54 points.

#### 19. Mandatory reading list:

1. Zijad Ibrišimović: Podzemni pritisci (Tuzla 2006.g.)
2. Petar Jovanović: Projektovanje i proračun podgrada horizontalnih podzemnih prostorija knjiga
3. (Beograd 1995.) 3. Z. Ibrišimović, N. Vidanović, K. Gutić, Izgradnja podzemnih rudarskih prostorija, rušenje radne sredine bez upotrebe eksploziva, Tuzla 2008. godine
4. K. Gutić, Efikasnost podgrađivanja podzemnih građevina sidrima, Tuzla 2009.godina
5. N.Vidanović, R. Tokalić, K. Gutić, Praktikum izrade podzemnih rudarskih prostorija, Beograd 2010.god.

#### 20. Additional reading list:

1. P.Jovanović, Izrada podzemnih prostorija velikih profila, Građevinska knjiga Beograd 1984

#### 21. Web sources:

#### 22. Applicable from the academic year:

2025/26

#### 23. Adopted in the Faculty/Academy session: