UNIVERSITY OF TUZLA UNIVERZITET U TUZLI

# SYLLABUS

## 1. Course title:

STRENGTH OF MATERIALS

## 2. Code:

LRUDOMT

## 3. Cycle of study:

1

## 4. ECTS credits:

5

## 5. Type of course:

Mandatory

## 6. Prerequisites:

Passed exam in the subjects: Mathematics, Statics.

## 7. Class restrictions:

The lectures can only be attended by students of the Mining study program, as they are tailored in content and scope

## 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 | 2 | | Individual work: | 70,75 |
| 9.3. Laboratory / Practice classes | 0 | | In total: | 129,0 |

## 10. Faculty:

Mining, Geology and Civil Engineering

## 11. Department/study program:

Mining Engineering

## 12. Lecturer:

PhD Adnan Ibrahimović Full Professor

## 13. Course aims:

Familiarizing students with tasks, theoretical principles, and practical problem-solving in the field of material resistance and strength, as well as recognizing the necessity of completing this knowledge and its applicability in the mining profession. The aim is to develop essential engineering skills for solving specific and real problems encountered in mining

**practice. Introducing students to material that serves as the foundation for the analysis of structures covered in the technical subjects of the mining study program. The course aims to enhance: intellectual skills in applying acquired knowledge, communication skills in both written and verbal forms, individual work skills, skills related to continuous work throughout the year, participation in all teaching activities and obligations, and fostering two-way, unbiased communication between the professor and students.**

## 14. Learning outcomes:

**At the end of the course, successful students, who have continuously completed their obligations throughout the entire teaching period, will be able to:**
- **Use available literature related to solving various problems in this course,**
- **Solve problems of varying complexity, both individually and in teams, and present solutions in written or verbal form,**
- **Understand the significance of this course in solving practical problems,**
- **Pass the final exam in the first exam periods at the end of the semester,**
- **Apply the acquired knowledge for successful participation in courses in the upcoming semesters of the study plan.**

## 15. Course content:

**Basic concepts, History of development, Principles, and tasks of Material Strength:**
- **Method of sections and sectional forces**
- **Stresses in a strained deformable body**
- **Deformations of a strained deformable body**
- **Relationship between stress and deformation**
- **Theories of material failure and allowable stress**
- **Geometric characteristics of plane sections**
- **Axial stress in a straight bar**
- **Torsional stress in a straight bar (shafts, axles)**
- **Bending stress in a straight bar (beams)**
- **Beam deformation**
- **Complex stresses**
- **Stability of compressed bars.**

## 16. Learning methods:

**Lectures, tutorial exercises, individual programming task:**
**The student is required to regularly attend lectures and tutorial exercises throughout the semester. The student can be absent for a maximum of three (3) lectures (P) and three (3) tutorial exercises (AV). For continuous participation in class throughout the semester and in discussions with the instructor, it is possible to earn 3 points. If the student meets the specified limitations (maximum of 3 absences in P and 3 in AV and is active in class), they can earn a total of 15 points during the semester (6 P + 6 AV + 3 activity). These points are part of the pre-exam points (pre-exam obligations). The individual programming task includes a set of calculation examples that cover the areas addressed in lectures and exercises. Students are required to complete the programming task within a specified time, no later than 15 days before the end of the semester, and submit it to the instructor for review and defense. For completed and defended programming tasks, the student earns an additional 15 pre-exam points.**

## 17. Assessment methods:

**The methods of evaluating students include the following criteria:**
1. **Attendance and participation in lectures and exercises**
2. **Individual programming task**
3. **Final written exam**
4. **Final oral exam**

## 18. Assessment components:

**Attendance and Activity:**
- **Attendance in lectures: 6 points**
- **Attendance in laboratory exercises: 6 points**
- **Class participation: 3 points**
- **Individual programming task: 15 points**
- **Test: 20 points**
- **Total pre-exam points: 50 points**

**Final Exam:**
- **Theoretical part: 30 points**
- **Practical part: 20 points**
- **Total exam points: 50 points**

**Final Grade (based on total points):**

- **10 (A) - Excellent, without errors or with minimal errors, awarded for 95-100 points**
- **9 (B) - Above average, with some errors, awarded for 85-94 points**
- **8 (C) - Average, with noticeable errors, awarded for 75-84 points**
- **7 (D) - Generally good, but with significant deficiencies, awarded for 65-74 points**
- **6 (E) - Meets minimum criteria, awarded for 54-64 points**
- **5 (F, FX) - Does not meet minimum criteria, awarded for less than 54 points.**

## 19. Mandatory reading list:

**1. A. Ibrahimović, K. Mandžić, H. Hadžić: Otpornost materijala, Knjiga prva, Bosanska medijska grupa, Biblioteka "Univerzitetska knjiga", Tuzla, 2019.**
**2. B. Verbič: Otpornost materijala, Četvrto prerađeno i dopunjeno izdanje, Građevinski fakultet Sarajevo, Sarajevo, 1989.**
**3. D. Rajić, Ž. Bojović: Otpornost materijala, Prvo izdanje, Zavod za udžbenike i nastavna sredstva, Beograd, 1994.**
**5. S. Hodžić, S. Mašić: Zbirka zadataka iz Otpornosti materijala sa teorijom elastičnosti, RGGF Tuzla, 2004.**
**10. Dž. Kudumović, S. Alagić: Zbirka zadataka iz Otpornosti materijala, Mašinski fakultet Tuzla, 2006.**

## 20. Additional reading list:

**1. V.Šimić: Otpornost materijala 1, Školska knjiga Zagreb, 2002.**
**2. V.Šimić: Otpornost materijala 2, Školska knjiga Zagreb, 2002.**
**3. S. Hodžić: Otpornost materijala sa teorijom elastičnosti, Prvo izdanje, Rudarsko-geološko-građevinski fakultet Tuzla, Tuzla, 2004.**
**4. V. Brčić: Otpornost materijala, Peto izdanje, Građevinska knjiga, Beograd, 1985. 8.**

## 21. Web sources:

## 22. Applicable from the academic year:

**2025/26.**

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