UNIVERSITY OF TUZLA UNIVERZITET U TUZLI

SYLLABUS

1. Course title:

MINING THERMODYNAMICS

2. Code:

LRUDRTD

3. Cycle of study:

1

4. ECTS credits:

4

5. Type of course:

Mandatory

6. Prerequisites:

No

7. Class restrictions:

No

8. Duration / semester(s):

1 | 5

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:	46,42
9.3. Laboratory / Practice classes	0		In total:	102,6 7

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 thermodynamics and geothermal processes in the workplace.
- Improving skills in applying acquired knowledge to solve various practical problems.
- Enhancing communication skills in written and verbal form.

- Developing skills related to individual and team/group work.
- Strengthening 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 related to this course.
- Solve problems of varying complexity individually or in a team and present them in written or verbal form.
- Understand the significance of this course in solving various practical problems.
- Pass the final exam in the first exam sessions at the end of the semester.

15. Course content:

Introduction, Thermodynamic Units and Scales

- Ideal and Real Substances
- Thermal State Variables, Measurement, and Units
- Thermodynamic Processes of Ideal Gases
- First and Second Law of Thermodynamics
- State Changes of Ideal Gases
- Cyclic Processes in Working Machines, Mine Ventilation, and Air Conditioning
- Energy Transfer, Work, and Heat
- Combustion and Spontaneous Oxidation
- Thermodynamics of Humid Air and Microclimatic Conditions in the Workplace
- Computational Modeling and Simulation of Thermal Processes in Mines
- Geothermal Energy
- Thermodynamic Processes in Mines and Basics of Aerology
- Climatic Conditions
- Fires and Explosions
- Heating, Ventilation, and Air Conditioning (HVAC)

16. Learning methods:

The main learning methods include:

- Lectures
- Team/Group Projects (Seminar Papers)
- Short Tests covering the core concepts of each topic or teaching unit

Continuous participation in lectures throughout the semester, engagement in thematic discussions, initiative, and other activities that enhance the quality of teaching will be rewarded with additional points in the final grade. The course instructor will keep records of these activities. The completion of individual and team projects is mandatory.

17. Assessment methods:

The knowledge assessment methods include both written and oral evaluations. The student evaluation criteria include:

1. Attendance and participation in lectures
2. Written/calculative part of the exam
3. Written/theoretical part of the exam
4. Individual/group projects or seminar papers

Written Methods:
Written knowledge assessment through quick tests after specific topics in the syllabus.
Written exams consist of two separate parts:
Problem-solving section (solving exercises/tasks).
Theoretical section (understanding of covered theoretical concepts).
Oral Methods:
Defense of the team project through a presentation.
Other forms of verbal communication through interactive discussions.

18. Assessment components:

Half of the total points, i.e., 50 points, can be earned during the teaching process through the following activities:

- Attendance and participation in classes – up to 10 points
- Seminar and team projects, essays – up to 30 points
- Tests – up to 10 points

The total number of points from pre-exam obligations is 50 points.
The final exam is taken after attending the lectures, in scheduled terms. The maximum number of points that can be earned in the final exam is 50 points.
The final score is the sum of the points earned during the semester and in the final exam, determining the student's final grade.
The final student performance, after all the designated forms of knowledge assessment, is evaluated and graded using a

system comparable to the ECTS grading scale, as follows:
a) 10 (A) – Outstanding performance, without errors or with only minor errors, earns 95-100 points.
b) 9 (B) – Above average performance, with some errors, earns 85-94 points.
c) 8 (C) – Average performance, with noticeable errors, earns 75-84 points.
d) 7 (D) – Generally good performance, but with significant deficiencies, earns 65-74 points.
e) 6 (E) – Meets the minimum criteria, earns 54-64 points.
f) 5 (F, FX) – Does not meet the minimum criteria, earns less than 54 points.

19. Mandatory reading list:

1. Autorizovane skripte predmetnog nastavnika
2. J. Marković, R. Šišić, A. Bašić, Teorija gorenja i eksplozije, RGGF Tuzla, 2010.
3. R. Šišić, J. Marković, A. Bašić, Požari i eksplozije u rudarstvu i industriji, RGGF Tuzla, 2012.

20. Additional reading list:

21. Web sources:

22. Applicable from the academic year:

2025/26.

23. Adopted in the Faculty/Academy session: