SYLLABUS

1. Course title:

SURFACE MINE DESIGNING

2. Code:

LRUDPPK

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

Mandatory

6. Prerequisites:

No

7. Class restrictions:

No

8. Duration / semester(s):

1   7

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:	80,00	
9.3. Laboratory / Practice classes	1		In total:	136,25	

10. Faculty:

Mining, Geology and Civil Engineering

11. Department/study program:

Mining Engineering

12. Lecturer:

PhD Tihomir Knežiček Full Professor

13. Course aims:

• Introduce final-year students to the principles of designing surface mining facilities using both traditional and modern methods.
• Enhance their intellectual skills in applying acquired knowledge to solve various problems.

- Improve their communication skills.
- Develop students' skills for continuous work throughout the entire year.

14. Learning outcomes:

At the end of the semester, successful students who have consistently fulfilled their obligations throughout the entire teaching period will be able to:
- Use available literature to solve various problems related to this course.
- Solve problems of varying complexity, both individually and in teams, and present their solutions.
- Understand the significance and applicability of this course in practical industrial work.

15. Course content:

Lecture Content (Total 60 hours):
1. Goal, Importance, Methods, and Sequence of Designing Surface Mines (4 hours)
2. Types of Deposits for Surface Mining (2 hours)
3. Geometry of Surface Mines - Benches, Slopes, Transport Roads, Water Catchments (8 hours)
4. Development Direction of Works, Maximum Depth, Capacity, and Calendar Plan for Surface Mine Development (6 hours)
5. Opening with Cuts, Work Zones (4 hours)
6. Construction of Surface Mine, Infrastructure, and Waste Disposal Locations (4 hours)
7. Design of the Mine-Cross Section System of Exploitation and High-Strip Mining Methods (2 hours)
8. Adaptation of Surface Mine Projects with the Introduction of New Technologies and Tools (8 hours)
9. Rehabilitation and Reuse of Excavated Craters and Quarries (6 hours)
10. Development of Surface Coal Mines According to Energy Requirements (4 hours)
11. Logic of Software Design for Surface Mines and Computer-Aided Design Methods (8 hours)
12. Satellite Support for Surface Mining Design (4 hours)
Exercise Content (Total 15 hours):
- Creating Profiles from Mining Maps and Geometric Analysis (7 hours)
- Familiarization with Mining Software (8 hours)

16. Learning methods:

Interactive lectures, conducting exercises, consultations, and email communication with students, as well as the preparation of seminar papers. If necessary, the distance learning method can be applied through the university's web platform or other online tools.

17. Assessment methods:

Student Assessment Methods:
The evaluation of students includes the following criteria:
1. Attendance and participation in lectures and exercises
2. Test
3. Final exam
For students enrolled in the course, the knowledge assessment involves taking the final exam at the end of the semester according to scheduled exam dates. If the student does not pass the exam, they will retake it in the next available exam period, which is announced at the beginning of each academic year.
The exam consists of a pre-test (task – profile creation) and 3 questions that must be answered in writing within a maximum of 2 academic hours. The questions are strictly based on the content of the course units, and the selection of questions is made using a random selection method.

18. Assessment components:

Total Points Calculation:
The total number of points is obtained by summing the maximum possible points from all activities during the semester: attendance and participation in lectures, written/oral exams. The points are distributed as follows:
- Attendance: 5 points
- Participation: 5 points
- Test: 40 points
- Pre-exam Obligations: 50 points
- Final Exam: 50 points
Total: 100 points
Final Evaluation:
The student's final performance is evaluated and graded according to a system comparable with the ECTS grading scale as follows:
- 10 (A) - Excellent performance with no or minimal errors, earns 95-100 points.
- 9 (B) - Above average, with a few errors, earns 85-94 points.
- 8 (C) - Average, with noticeable errors, earns 75-84 points.
- 7 (D) - Generally good, but with significant deficiencies, earns 65-74 points.

- •   **6 (E) - Meets the minimum criteria, earns 54-64 points.**
- •   **5 (F, FX) - Does not meet the minimum criteria, earns less than 54 points.**

19. Mandatory reading list:

1. Knežiček T., Projektovanje površinskih rudnika, Tuzla 2007.
2. Knežiček T., Računarski podržano projektovanje površinskih kopova, Tuzla 2004.
3. Živković, Vrkljan, Površinska eksploatacija mineralnih sirovina, Zagreb 2002.
4. Kennedy editor, Surface Mining – Second edtion, New York 1990.
5. Knežiček T., Nurić S., Osnove površinske eksploatacije, Tuzla 2015.

20. Additional reading list:

Popović N., Naučne osnove projektovanja površinskih kopova, Tuzla 1984.
Hassan Z. Harraz, Mining Methods: Part I-Surface mining, US, 2010.
Sridhar Prasad, Surface Mining Methods, Debre Berhan University 2018.

21. Web sources:

www.osmre.gov
www.epiroc.com › en-uk
www.greatmining.com
https://americanmineservices.com/surface-mining-process/
www.wirtgen.de
www.esri.com
www.gccoal.com

22. Applicable from the academic year:

2025/26.

23. Adopted in the Faculty/Academy session: