SYLLABUS

1. Course title:

REMOTE CONTROL AND MANAGEMENT

2. Code:

LRUDKUR

3. Cycle of study:

1

4. ECTS credits:

4

5. Type of course:

Elective

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	2		Classes:	33,75
9.2. Seminars	1		Individual work:	68,67
9.3. Laboratory / Practice classes	0		In total:	102,42

10. Faculty:

Mining, Geology and Civil Engineering

11. Department/study program:

Mining Engineering

12. Lecturer:

PhD Samir Nurić Full Professor

13. Course aims:

- **Familiarize students with basic knowledge in the field of remote control and management,**
- **Train students to use specific software packages in the field of remote control and management,**
- **Train students to utilize various remote control processes in mining,**

• Enhance their intellectual skills in applying acquired knowledge to solve various engineering problems,
• Improve their written and verbal communication skills,
• Develop their skills related to individual and team/group work,
• Strengthen students' ability to maintain continuous work throughout the academic year,
• Prepare students for teamwork and open communication between professors and students, thereby improving the teaching process and the absorption of new knowledge.

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 able to:
• Use available (written/electronic) literature related to solving various problems in this course,
• Utilize software tools to assist in remote control and management of mining operations,
• Solve problems of varying complexity, both individually and in teams, and present them in written or verbal form,
• Understand the significance of this course in solving various problems in engineering practice,
• Pass the final exam in the first exam sessions at the end of the semester.

15. Course content:

Course Syllabus Presentation: Remote Control and Management of Mining Operations. Functions of the Dispatching System in Open-Pit Mines. Determining the Precise Location of Machinery in the Mine. Truck Capacities for Open-Cycle Operation with Automatic Dispatching. Methods of Transmitting Information from Machinery to the Dispatching Center and Vice Versa. Application of GPS Technology in Open-Pit Mines. Basic Elements of a Remote Detection, Tracking, and Management System for Mobile Equipment. Tracking System Capabilities. Control Elements of the Remote Detection System for Trucks in Open-Pit Mines. Effects of Implementing Remote Control Systems

16. Learning methods:

Lectures, Exercises, and Interactive Work (Distance Learning)
Students are required to attend lectures and exercises throughout the entire semester, as defined by the Regulations of the University of Tuzla. The criteria for obtaining the signature for the course are also outlined in the University's regulations. The instructor will monitor student attendance throughout the semester using a specially created form.

17. Assessment methods:

The methods for evaluating students include the following criteria:
1. Attendance at Lectures
2. Activity in Exercises and Lectures
3. Tests
4. Final Exam
Written methods involve written assessments to check knowledge through tests after specific areas of the course syllabus.

18. Assessment components:

Total Number of Points
The total number of points is obtained by summing the maximum possible points from all activities during the semester:
• Attendance at Lectures: 5 points
• Attendance at Exercises: 5 points
• Activity in Exercises: 5 points
• Test: 35 points
• Final Exam: 50 points
TOTAL: 100 points
Grading Scale
The final student performance after all forms of knowledge assessment is evaluated and graded using a system comparable to the ECTS grading scale as follows:
a) 10 (A) - Exceptional performance with no or minimal errors, 95-100 points
b) 9 (B) - Above average performance with a few mistakes, 85-94 points
c) 8 (C) - Average performance with noticeable errors, 75-84 points
d) 7 (D) - Generally good, but with significant deficiencies, 65-74 points
e) 6 (E) - Meets the minimum criteria, 54-64 points
f) 5 (F, FX) - Does not meet the minimum criteria, fewer than 54 points

19. Mandatory reading list:

1. Autonomous and Remote Operation Technologies in the Mining Industry Benefits and Cost,s Brian S. Fisher and Sabine Schnittger
2. Envisioning the Future of Mining, IBM Global Business Services
3. Remote monitoring and control in the mining industry, 2014, Software - SCADA/MES, D. Celine

20. Additional reading list:

21. Web sources:

http://www.theaustralian.com.au/business/mining-energy/rio-to-trial-automated-mining/storye6frg9df-1111115351260
http://www.micromine.com/products-downloads/pitram?gclid=CKuEkcPPzcECFQqEfgodUxQAcA
http://www.cat.com/en_US/support/operations/technology/cat-minestar.html/
http://mining.sandvik.com/en/products/equipment/mine-automation-systems
http://www.komatsu.com.au/AboutKomatsu/Technology/Pages/AHS.aspx

22. Applicable from the academic year:

2025/26.

23. Adopted in the Faculty/Academy session: