SYLLABUS

1. Course title:

GEOGRAPHIC INFORMATION SYSTEMS

2. Code:

LRUDGIS

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 | 6

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	0		Individual work:	67,25
9.3. Laboratory / Practice classes	1		In total:	101,0 0

10. Faculty:

Mining, Geology and Civil Engineering

11. Department/study program:

Mining Engineering

12. Lecturer:

PhD Dr,sc, Adila Nurić Full Professor

13. Course aims:

- Understanding relevant concepts and issues related to the development of geoinformation systems.
- Familiarization with the necessary techniques and skills for designing and using geoinformation systems.
- Exploring the capabilities of GIS software through practical work.

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 apply their acquired knowledge and:
- **Utilize available literature related to the development and establishment of geoinformation systems.**
- **Understand the importance of applying geoinformation systems in mining.**
- **Perform data entry, processing, analysis, and visualization of available geospatial data.**

15. Course content:

Geoinformation Systems (GIS) - Key Topics
Spatial Data and Information
GIS Functionality and Components
Data in GIS: Geometric and Attribute Elements of Geospatial Data
Fundamental Spatial Concepts
Euclidean Space
Set-Based Geometry of Space
Network Spaces
Metric Spaces
Fractal Geometry
Geoinformation Modeling
Modeling and Ontology
Modeling Processes
Field-Based Models
Object-Based Models
Data Structures and Access Methods
General Database Structures and Access Methods
Raster Structures
Point-Based Structures
Linear Objects
Object Collections
Architectures and Systems
Hybrid, Integrated, and Composite Architectures
Syntactic and Semantic Heterogeneity
Distributed Systems and Distributed Databases
Interfaces and Analysis
Cartographic Interfaces
Geovisualization
Spatiotemporal Information Systems
Indexing and Querying
GIS and Spatiotemporal Analysis of Geospatial Data

16. Learning methods:

Teaching Methods
- **Lectures, exercises, and consultations**
- **Seminar paper preparation**

The lectures and exercises are interactive and practical in nature, designed to engage students actively and provide hands-on experience.

17. Assessment methods:

Student Knowledge Assessment Methods
The assessment of students' knowledge includes the following criteria:
1. **Test 1 (theoretical part)**
2. **Test 2 (practical part)**
3. **Seminar paper**
4. **Final exam**

At the end of the course, the instructor will assign a final grade by scoring individual activities based on the listed criteria.

18. Assessment components:

Grading and scoring breakdown:
- **Test 1: 15 points**
- **Test 2: 15 points**
- **Seminar Paper: 15 points**
- **Activity: 5 points**
- **Pre-exam Activities: 50 points**

- **Final Exam: 50 points**
- **Total Points: 100 points**

Final Grade Evaluation (ECTS Grading Scale):

- **10 (A): Exceptional performance with no or minimal errors (95-100 points)**
- **9 (B): Above average, with some errors (85-94 points)**
- **8 (C): Average, with noticeable errors (75-84 points)**
- **7 (D): Generally good, but with significant shortcomings (65-74 points)**
- **6 (E): Meets the minimum criteria (54-64 points)**
- **5 (F, FX): Does not meet the minimum criteria (less than 54 points)**

19. Mandatory reading list:

Mirza Ponjavić: Osnovi geoinformacija,Sarajevo, 2011.
M. Molenaar: An Introduction to the Theory of Spatial Object Modelling, Taylor & Francis, 1998
Worboys M., Duckham M.: GIS – A Computing Perspective, CRC Press, 2004

20. Additional reading list:

21. Web sources:

22. Applicable from the academic year:

2025/26

23. Adopted in the Faculty/Academy session: