

	UNIVERSITAS PENDIDIKAN INDONESIA
	SEMESTER LEARNING PLAN (RPS)

COURSE IDENTITY

Course Name	Course Code	Credits	Workload	Course Group	Semester	Prerequisite Course
MINING SURVEY AND MAPPING	SA527	2	90	Study Programme Core Competency Course (MKKPBS)	5	-

Prepared by Course Lecturer	Reviewed by Study Programme QA Team	Approved by Head of Study Programme
Totok Doyo Pamungkas, M.Eng.	Shafira Himayah, S.Pd., M.Sc.	Dr. Lili Somantri, S.Pd., M.Si.

COURSE DESCRIPTION AND GRADUATE LEARNING OUTCOMES (CPL)

Course Description	This is a compulsory course offered to students of the Geographic Information Science (GIS) programme. The Mining Survey and Mapping course is designed with the expectation that students will be able to understand and apply the principles of mining mapping work comprehensively and correctly. The material is divided into two parts: the basic concepts of survey and mapping in the mining sector, and their application in the mining industry.
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Graduate Learning Outcomes (CPL) Assigned to This Course

No.	Graduate Learning Outcomes (CPL) Assigned to This Course
S2	To uphold human values in carrying out duties based on religion, morality, and ethics.
S9	To demonstrate a sense of responsibility for work in the field of expertise independently.
P2	To possess a thorough theoretical understanding of survey, mapping, and geographic information, encompassing terrestrial and regional surveys.
P4	To possess a thorough theoretical understanding of geospatial data analysis methods, including databases, programming, spatial statistics, spatial analysis and modelling, and geographic information systems.
K U5	To be capable of making sound decisions in the context of solving problems in the field of expertise, based on the results of information and data analysis.
K U8	To be capable of taking responsibility for the achievement of group work outcomes and of supervising and evaluating the completion of work assigned to workers under their responsibility.
K K2	To be capable of applying measurement methods for geospatial data acquisition.

K K4	To be capable of processing, analysing, and presenting geosphere data and information using geospatial technology for geographic learning and research.
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Course Learning Outcomes (CPMK)

N o.	Course Learning Outcomes (CPMK)
1	S2, P2, KU5, KK2 – To be capable of mastering the concepts and methods of mineral exploration and mining survey and mapping.
2	S2, P4, KU5, KU8, KK2, KK4 – To be capable of conducting mining survey and mapping through mineral exploration studies.
3	S9, P4, KU5, KU8, KK2, KK4 – To be capable of conducting detailed mapping through RS and GIS analysis for mining.
4	S9, P4, KU5, KU8, KK2, KK4 – To be capable of conducting measurements and analysing subsurface mineral types and performing volumetric calculations of mineral resources.
5	S2, P2, KU8, KK4 – To be capable of analysing mining feasibility and producing reports on the results of mineral survey and measurement.

Sub-CPMK

N o.	CPMK Ref.	Sub-CPMK Formulation
1	CPMK - 1	Theoretical competency in mining survey and mapping concepts.
2	CPMK - 2	To be capable of conducting exploration studies in mining survey and mapping.
3	CPMK - 3	To be capable of conducting detailed mining mapping analysis through RS and GIS.
4	CPMK - 4	To be capable of analysing mining survey measurement results through to volumetric calculation.
5	CPMK - 1	To be capable of producing mining survey and mapping analysis reports in accordance with procedures and standards.

Course Materials

N o.	Course Materials
1	Course regulations (RPS)
2	Introduction to mining geology
3	Mining classification
4	Petroleum systems
5	Geothermal systems
6	Introduction to geophysical methods for exploration
7	Mining exploration
8	Mid-Semester Examination (UTS)
9	Mapping of mining land use change using multitemporal imagery
10	Mapping of mine reclamation and rehabilitation
11	Mapping of mining impacts on water quality using Remote Sensing

12	Practical session: geoelectric and geomagnetic measurements for subsurface identification
13	Mine safety and security (steep slopes, landslides, water impoundments)
14	Methods of subsurface mineral measurement and volumetric determination of mineral resources
15	Mining management
16	Final Semester Examination (UAS)

Demonstrable Learning Outcomes at the End of the Course	Individual and group paper reports; Mid-Semester Examination (UTS); Final Semester Examination (UAS); Assignments.
Learning Strategy	Case Method ✓ Team-based Project Other
General Description of Learning Steps	Learning is conducted in-person, covering both theory and practice in mining survey and mapping.
References	1. Muhammad Dhlani Balfas. Geology for General Mining. Buku Beta, Yogyakarta. 2. Arif Zulkifli. Sustainable Mining Management. Graha Ilmu. 3. Nandang Sudrajat. Theory and Practice of Mining in Indonesia. Pustaka Yustisia. 4. Ghilani, Charles D. & Wolf, Paul R. 2012. Elementary Surveying: An Introduction to Geomatics. New York. 5. Gupta, Harsh. & Roy, Sukanta. 2007. Geothermal Energy: An Alternative Resource for the 21st Century. Elsevier. 6. Lillesand T. M. & Kiefer R. W. 2004. Remote Sensing and Image Interpretation, 4th ed. New York: Wiley & Sons. 7. Prahasta, Eddy. 2009. Geographic Information Systems: Basic Concepts (Geodesy and Geomatics Perspective). Bandung: Informatika.

LEARNING PLAN

Week	Sub-CPMK	Sub-CPMK Achievement Indicators	Course Materials	Assessment Form (test/no n-test)	Assessment Weight (%)	Synchronous (face-to-face and virtual)	Asynchronous (individual and group assignments)	Duration	Reference No.	Access Time
1	Theoretical competency in mining survey and mapping concepts.	Introduction to the course, RPS, and course procedures.	Course regulations (RPS).	Participatory	4	Face-to-face	-	1.7	1	04-09-2024 07:00
2	Theoretical competency in mining survey and mapping concepts.	To explain the fundamentals of mining geology.	Introduction to mining geology.	Essay	4	Face-to-face		1.7	1	10-09-2024 10:20
3	Theoretical competency in mining survey and mapping concepts.	Students are able to understand the classification of mineral resources.	Mining classification.	Other	4	Face-to-face		1.7	1,3	17-09-2024 08:40
4	Theoretical competency in mining survey and mapping concepts.	Students are able to understand petroleum systems.	Petroleum systems.	Other	4	Face-to-face		1.7	1,3	24-09-2024 08:40
5	Theoretical competency in mining survey and mapping concepts.	Students are able to understand geothermal systems.	Geothermal systems.	Other	4	Face-to-face		1.7	1,3,5	01-10-2024 08:40
6	To be capable of conducting exploration studies in mining survey and mapping.	Students understand mining exploration studies using geophysical methods.	Introduction to geophysical methods for exploration.	Multiple Choice	4	Face-to-face		1.7	1,3	08-10-2024 08:40
7	To be capable of conducting exploration studies in mining survey and mapping.	Students are able to understand mining exploration.	Mining exploration.	Other	4	Face-to-face		1.7	1,3,4	15-10-2024 08:40
8	MID-SEMESTER EXAMINATION (UTS)									19
9	To be capable of conducting detailed mining mapping	Students are able to analyse mining land use change based on	Mapping of mining land use change using multitemporal imagery.	Other	4	Face-to-face	Assignment	1.7	4,7	29-10-2024 08:40

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STUDENT STUDY TIME (WORKLOAD)

Category	Activity	Synchronou s	Asynchrono us	Total (min/hrs)
Learning	Lectures/Tutorials	12×50 min = 600 min	-	1,075 min (17.9 hrs)
	Project-based Learning	3×100 min = 300 min	-	775 min (12.9 hrs)
	Discussion (case-based)	2×50 min = 100 min	-	500 min (8.3 hrs)
SUBTOTAL				2,350 min (39.2 hrs)
Assessment	Participation during learning	16×50 min = 800 min	-	1,000 min (16.7 hrs)
	Project work	5×100 min = 500 min	-	1,000 min (16.7 hrs)
	Assignments	5×50 min = 250 min	-	750 min (12.5 hrs)
	Quizzes	1×60 min = 60 min	-	60 min (1.0 hr)
	Formative			120 min (2.0 hrs)
	Summative			120 min (2.0 hrs)
SUBTOTAL				3,050 min (50.8 hrs)
TOTAL WORKLOAD				5,400 min (90 hrs)
Credits				2
Conformity with Credit Hours	CONFORMS			

CPMK ASSESSMENT CRITERIA

N o .	CPMK	CP L Tax on om y	Weig ht	Achievement Criteria
1	S2, P2, KU5, KK2 – To be capable of mastering concepts and methods of mineral exploration and mining survey and mapping.		20	80% of all students obtain a minimum score of 75 (on a scale of 100).
2	S2, P4, KU5, KU8, KK2, KK4 – To be capable of conducting mining survey and mapping through mineral exploration studies.		20	80% of all students obtain a minimum score of 75 (on a scale of 100).
3	S9, P4, KU5, KU8, KK2, KK4 – To be capable of conducting detailed mapping through RS and GIS analysis for		20	80% of all students obtain a minimum score of 75 (on a scale of 100).

	mining.			
4	S9, P4, KU5, KU8, KK2, KK4 – To be capable of conducting measurements and analysing subsurface minerals and performing volumetric calculations.		20	80% of all students obtain a minimum score of 75 (on a scale of 100).
5	S2, P2, KU8, KK4 – To be capable of analysing mining feasibility and producing reports on the results of mineral survey and measurement.		20	80% of all students obtain a minimum score of 75 (on a scale of 100).

COLLABORATIVE ASSIGNMENT PLAN

Course Name	Course Code	Credits	Workload	Course Group	Semester	Prerequisite Course
MINING SURVEY AND MAPPING	SA527	2	90	Study Programme Core Competency Course (MKKPBS)	5	-

Assignment Title	Mining Survey and Mapping Measurements
Learning Method	Team-based Project
Duration (minutes)	
Assessment Weight	50
Sub-CPMK	To be capable of analysing mining survey measurement results through to volumetric calculation.
Assignment Description	Conducting geophysical measurement data acquisition for mining exploration mapping; processing and interpreting subsurface mapping data; conducting RS and GIS analysis and volumetric calculation of mineral resources; conducting group presentations; preparing work reports.
Assignment Steps	1. Conducting geophysical measurement data acquisition for mining exploration mapping. 2. Processing and interpreting subsurface mapping data. 3. Conducting RS and GIS analysis and volumetric calculation of mineral resources. 4. Conducting group presentations. 5. Preparing work reports.
Final Output	- Mining exploration mapping in 1D, 2D, and 3D. - Written work report.
Indicators, Criteria, and Assessment Weight	Student activity, performance, and report. Assessment weight: 25%.
Implementation Schedule	Sessions 12, 13, 14, and 15 — 4 days.
Other Notes	-

REFERENCES

1. Nandang Sudrajat. Theory and Practice of Mining in Indonesia. Pustaka Yustisia.
2. Ghilani, Charles D. & Wolf, Paul R. 2012. Elementary Surveying: An Introduction to Geomatics. New York.
3. Lillesand T. M. & Kiefer R. W. 2004. Remote Sensing and Image Interpretation, 4th ed. New York: Wiley & Sons.

4. Prahasta, Eddy. 2009. Geographic Information Systems: Basic Concepts (Geodesy and Geomatics Perspective). Bandung: Informatika.