



UNIVERSITAS PENDIDIKAN INDONESIA

SEMESTER LEARNING PLAN (RPS)

COURSE IDENTITY

Course Name	Course Code	Credits	Workload	Course Group	Semester	Prerequisite Course	Date of Issue
GEOLOGY AND GEOMORPHOLOGY	SA221	4	180	Study Programme Skill Development (PKPS)	1		2025-09-09 11:26:56

Prepared by Course Lecturer	Reviewed by Study Programme QA Team	Approved by Head of Study Programme
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COURSE DESCRIPTION AND GRADUATE LEARNING OUTCOMES (CPL)

Course Description	Geology and Geomorphology is a study programme skill development course.
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Graduate Learning Outcomes (CPL) Assigned to This Course	
1	To be capable of mastering the theoretical concepts of geography, the application of geospatial technology to resolve geospheric problems, and the development of models and methods for geospheric problem-solving.
2	To be capable of integrating learning and innovation competencies, mastery of technology and information, career development, and life skills in order to become a lifelong learner.
3	To be capable of designing, developing, producing, utilising, controlling, and evaluating models of analysis and spatial information theory based on science and technology.

Course Learning Outcomes (CPMK)	
1	To analyse the processes by which minerals and rocks are formed.
2	To analyse the types of rock weathering, the products of rock weathering, and their uses.
3	Students are able to correlate the distribution of volcanoes with plate tectonics.
4	Students are able to identify geological resources and geological hazards.
5	Students are able to analyse geological maps and field conditions.
6	Students are able to explain the foundational concepts of geomorphology.
7	Students are able to understand geomorphological processes and the classification of landforms.
8	To be able to differentiate the geomorphological characteristics of a given region.
9	To be able to explain the processes underlying geomorphological variation in a given region.
10	To be able to identify environmental problems and resources based on geomorphological variation.

Sub-CPMK		
1	CPMK - 1	To understand and integrate the foundational theory of geology as well as its relationships with other disciplines and the scope of the object of study in geology.
2	CPMK - 2	To understand exogenous and endogenous processes, types of rock weathering, rock weathering processes, weathering products, and their uses.
3	CPMK - 3	To understand plate movement processes based on the concept of plate tectonics, the formation of volcanoes, and the types, classifications, and distribution of volcanoes in Indonesia.
4	CPMK - 4	To understand the formation of geological resources as well as geological hazards and their potential in Indonesia.
5	CPMK - 5	To understand a type of thematic map, namely the geological map, and to compare it with field conditions.
6	CPMK - 6	To understand foundational concepts relating to the geomorphological aspects of landforms on the earth's surface.

7	CPMK - 7	To understand the characteristics of landforms on the earth's surface and the processes accompanying them.
8	CPMK - 8	To understand the characteristics of each landform within a given region.
9	CPMK - 9	To understand the formation processes of each landscape type in a given region.
10	CPMK - 10	To understand the spatial relationships among landforms within a given region.
11	CPMK - 1	To understand and integrate the materials on minerals and rocks, rock weathering, and the geological time scale.

Course Materials	
1	Fundamental concepts and scope of the object of study in geology.
2	Processes of mineral and rock formation, types and distribution of minerals and rocks, uses of minerals and rocks.
3	Types of rock weathering, rock weathering processes, weathering products, and their uses.
4	Endogenous processes, foundational concepts of plate tectonic theory, types of tectonic plate movement, plate boundaries and the global distribution of plates.
5	Types of volcanoes, distribution of volcanoes by type in Indonesia.
6	Geological hazards and geological resources.
7	Types of thematic maps, namely geological maps; symbols in geological maps and methods of reading geological maps.
8	Foundational concepts of geomorphology and geomorphological processes.
9	Fluvial geomorphological units and their utility for human life.
10	Coastal geomorphological units and their utility for human life.
11	Volcanic and anthropogenic geomorphological units and their utility for human life.
12	Karst, structural, and denudational geomorphological units and their utility for human life.
13	Characteristics of topographic maps and aerial photographs, and their application to geomorphological units of river basins (DAS), folds and domes, faults, karst areas, coasts, and volcanic areas.
14	Field observation of geological and geomorphological data.

Demonstrable Learning Outcomes at the End of the Course	Students are able to read and understand geological maps. Students are able to recognise geomorphological processes both theoretically and through field practice.
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Learning Strategy	Case Method
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Learning Steps	1. Identification of Learning Objectives: Determine what is to be achieved. Clear objectives assist in planning the learning process. 2. Preparation of Materials: Gather the necessary resources and materials. These may include books, articles, videos, or other learning aids. 3. Learning Methods: Select an appropriate learning method, such as lectures, discussions, simulations, or project-based learning. 4. Implementation of Learning: Execute the plan that has been prepared. Ensure active participation and engagement in the process. 5.
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	Practice and Application: Apply what has been learned in real-life situations or through exercises. This helps to consolidate understanding. 6. Evaluation and Feedback: Reflect on one's own understanding and progress, or seek feedback from others. Feedback is important for identifying areas requiring improvement. 7. Reflection: Take time to reflect on the learning experience. What was effective? What could be improved? 8. Further Application and Development: Apply the knowledge acquired in daily life or in a professional context, and continue learning to deepen understanding.
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References	
1	Asikin, Sukendar. Basic of Geology. Departemen Geologi ITB. Unpublished.
2	Asikin, Sukendar. 1987. Buku Penuntun Geologi Lapangan. Geologi ITB. Unpublished.
3	Catuneanu, O. 2006. Principles of Sequence Stratigraphy. New York: Elsevier, 386 p.
4	Compton, Robert R. 1985. Geology in the Field. Stanford University, John Wiley & Sons.
5	Fry, N. 1985. The Field Description of Metamorphic Rocks. Geological Society of London Handbook Series. New York.
6	Geni Dipatunggoro dan Febri Hirnawan. Diktat Mata Kuliah Metode Pemetaan Geologi. Jurusan Geologi, UNPAD, Bandung. Unpublished.
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8	Handoyo, Agus Harsolumakso. 2001. Buku Pedoman Geologi Lapangan. Departemen Teknik Geologi, ITB, Bandung.
9	Koesoemadinata, R.P. 1978. Prinsip-Prinsip Sedimentasi. Departemen Teknik Geologi, ITB.
10	O'Dunn, Shannon M.S. dan William D. Sill, Ph.D. 1987. Exploring Geology. T.H. Peek, Publisher, Palo Alto, CA 94303.
11	Otto S.R. Ongkoso. (1982). The Nature of Coastline Changes in Indonesia. The Indonesian Journal of Geography, Faculty of Gadjah Mada University. Page 18-27.
12	Tornbury. (1954). Principles of Geomorphology. Bloomington Indiana: John Wiley. Pp. 99-175.
13	Setia Graha, Doddy, Ir. 1987. Batuan dan Mineral. Penerbit Nova, Bandung.
14	Siever, Raymond. (1986). Global Plate Tectonics: The Unifying Model.
15	Stahler, Alan and Arthur. (1979). Element of Physical Geography. Chichester Brisbane Toronto: John Wiley and Sons. Pp. 347, 373.
16	Sutanto. (1979). Pengetahuan Dasar Interpretasi Citra. Fakultas Geografi UGM.

LEARNING PLAN

Week	Sub-CPMK	Achievement Indicators	Course Materials	Assessment Form	Weight (%)	Synchronous	Asynchronous	Duration	Ref. No.	Access Time
1	To understand and integrate the foundational theory of geology and its relationships with other disciplines and the scope of the object of study in geology.	Students are able to re-explain the fundamentals of general geology correctly; to explain the relationship of geology with other disciplines in their own words; and to re-explain the basic principles of geology correctly.	Fundamental concepts and scope of the object of study in geology.	Participatory	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	1,14	04-09-2025 07:00
2	To understand and integrate the materials on minerals and rocks, rock weathering, and the geological time scale.	Students are able to explain the processes of mineral and rock formation, the types and distribution of minerals and rocks, and the uses of minerals and rocks.	Processes of mineral and rock formation, types and distribution of minerals and rocks, uses of minerals and rocks.	Participatory	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	5,7	11-09-2025 07:00
3	To understand exogenous and endogenous processes, types of rock weathering, rock weathering processes, weathering products, and their uses.	To be able to understand exogenous and endogenous processes and types of rock weathering.	Types of rock weathering, rock weathering processes, weathering products, and their uses.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	13	18-09-2025 07:00
4	To understand plate movement processes based on the concept of plate tectonics, the formation of volcanoes, and the types, classifications, and distribution of volcanoes in Indonesia.	Students are able to explain the foundational concepts of plate tectonic theory and the processes underlying plate tectonic theory.	Endogenous processes, foundational concepts of plate tectonic theory, types of tectonic plate movement, plate boundaries and the global distribution of plates.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	3,4,14	25-09-2025 07:00
5	To understand plate movement processes based on the concept of plate tectonics, the formation of volcanoes, and the types, classifications, and distribution of	Students are able to explain the types of volcanoes and the distribution of volcanoes by type in Indonesia.	Types of volcanoes, distribution of volcanoes by type in Indonesia.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	15	02-10-2025 07:00

	volcanoes in Indonesia.									
6	To understand the formation of geological resources and geological hazards and their potential in Indonesia.	Students are able to interpret the potential of geological resources for geological extraction. Students are able to correctly explain the benefits of geological resources for present and future life.	Geological hazards and geological resources.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	2,7	09-10-2025 07:00
7	To understand a type of thematic map, namely the geological map, and to compare it with field conditions.	To understand the type of thematic map, namely the geological map, the symbols used in geological maps, and methods of reading geological maps.	Types of thematic maps, namely geological maps; symbols in geological maps and methods of reading geological maps.	Observation	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	6	16-10-2025 07:00
8	MID-SEMESTER EXAMINATION (UTS)				15					23-10-2025 07:00
9	To understand the foundational concepts relating to geomorphological aspects of landforms on the earth's surface.	Students are able to understand foundational concepts relating to geomorphological aspects of landforms on the earth's surface. Students are able to explain geomorphic processes, the conditions and processes of formation, the morphological cycle, resource utilisation, and problems and solutions in resource utilisation.	Foundational concepts of geomorphology and geomorphological processes.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	12	30-10-2025 07:00
10	To understand the characteristics of landforms on the earth's surface and the processes accompanying them.	Students are able to explain and analyse the characteristics of fluvial geomorphology and the utilisation of river basins (DAS) for environmental conservation.	Fluvial geomorphological units and their utility for human life.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	9,12	13-11-2025 07:00
11	To understand the characteristics of each landform within a given region.	Students are able to explain and analyse the characteristics of coastal geomorphology, the various landforms and	Coastal geomorphological units and their utility for human life.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	9,11,12	20-11-2025 07:00

		processes involved, coastal change and development and their utilisation, various problems arising from utilisation, and measures to address them in coastal areas.								
12	To understand the formation processes of each landscape type in a given region.	Students are able to explain and analyse the forces and processes of formation, the characteristic landforms and uses of volcanic areas, and the landforms that have been subject to human intervention.	Volcanic and anthropogenic geomorphological units and their utility for human life.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	8,9,12	27-11-2025 07:00
13	To understand the formation processes of each landscape type in a given region.	Students are able to explain and analyse the character and landforms, karst processes, structural and denudational processes, as well as the benefits of karst, structural, and denudational landforms for human life.	Karst, structural, and denudational geomorphological units and their utility for human life.	Essay	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	8,9,12	04-12-2025 07:00
14	To understand the formation processes of each landscape type in a given region.	To analyse the characteristics of topographic maps and aerial photographs, and their application to the geomorphological units of river basins, folds and domes, faults, karst areas, coasts, and volcanic areas.	Characteristics of topographic maps and aerial photographs, and their application to geomorphological units of river basins, folds and domes, faults, karst areas, coasts, and volcanic areas.	Observation	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	2,6,16	11-12-2025 07:00
15	To understand the spatial relationships among landforms within a given region.	Students are able to identify landforms from field observations based on geological and geomorphological data; explain spatial relationships between landforms and geological and geomorphological conditions in the study	Field observation of geological and geomorphological data.	Observation	5	Face-to-face; expository method using lecture and interactive media to foster critical thinking.	Independent material exploration.	4 x 50 min	2,6,10	11-12-2025 07:00

		area; present field observation results in the form of spatial and visual descriptions; and analyse the relationship between landforms and environmental potential and problems at the observation site.								
16	FINAL SEMESTER EXAMINATION (UAS)				15					18-12-2025 07:00

STUDENT LEARNING WORKLOAD

LEARNING ACTIVITIES	SYNCHRONOUS	ASYNCHRONOUS	STUDENT STUDY PREPARATION	TOTAL STUDENT LEARNING AND INSTRUCTION TIME
Lecture/Tutorial/Guided Response	14 x 120 min = 1,680 min	14 x 90 min = 1,260 min	14 x 30 min = 420 min	3,360 minutes (56.0 hours)
Project-based Learning	4 x 120 min = 480 min	4 x 120 min = 480 min	4 x 60 min = 240 min	1,200 minutes (20.0 hours)
Discussion (case-based learning)	8 x 60 min = 480 min	8 x 60 min = 480 min	8 x 30 min = 240 min	1,200 minutes (20.0 hours)
TOTAL				5,760 minutes (96.0 hours)
ASSESSMENT				
Participation During Instruction	14 x 60 min = 840 min	14 x 30 min = 420 min	14 x 30 min = 420 min	1,680 minutes (28.0 hours)
Project Work	8 x 60 min = 480 min	8 x 90 min = 720 min	8 x 30 min = 240 min	1,440 minutes (24.0 hours)
Assignments	8 x 60 min = 480 min	8 x 60 min = 480 min	8 x 30 min = 240 min	1,200 minutes (20.0 hours)
Quizzes	4 x 30 min = 120 min	4 x 30 min = 120 min	4 x 30 min = 120 min	360 minutes (6.0 hours)
Formative Assessment				180 minutes (3.0 hours)
Summative Assessment				180 minutes (3.0 hours)
TOTAL				5,040 minutes (84.0 hours)
TOTAL WORKLOAD				10,800 minutes (180 hours)
IDEAL NUMBER OF HOURS				180 Hours
CREDITS (SKS)				4
CONFORMITY WITH CREDIT HOURS				COMPLIANT

CPMK ASSESSMENT CRITERIA

No	CPMK	CPL1	CPL2	CPL3	Weight	CPMK Achievement Criteria
1	To analyse the processes by which minerals and rocks are formed.	4			10	75% of all students achieve a score of at least 65 (on a scale of 100).
2	To analyse the types of rock weathering, the products of rock weathering, and their uses.	4			5	75% of all students achieve a score of at least 65 (on a scale of 100).
3	Students are able to correlate the distribution of volcanoes with plate tectonics.	4			10	75% of all students achieve a score of at least 65 (on a scale of 100).
4	Students are able to identify geological resources and geological hazards.	4			5	75% of all students achieve a score of at least 65 (on a scale of 100).
5	Students are able to analyse geological maps and field conditions.		3		5	75% of all students achieve a score of at least 65 (on a scale of 100).
6	Students are able to explain the foundational concepts of geomorphology.		2		5	75% of all students achieve a score of at least 65 (on a scale of 100).
7	Students are able to understand geomorphological processes and the classification of landforms.		2		5	75% of all students achieve a score of at least 65 (on a scale of 100).
8	To be able to differentiate the geomorphological characteristics of a given region.		2		5	75% of all students achieve a score of at least 65 (on a scale of 100).
9	To be able to explain the processes underlying geomorphological variation in a given region.		2		15	75% of all students achieve a score of at least 65 (on a scale of 100).
10	To be able to identify environmental problems and resources based on geomorphological variation.			4	5	75% of all students achieve a score of at least 65 (on a scale of 100).

COLLABORATIVE TASK DESIGN

TASK TITLE	Geology and Geomorphology Field Course
LEARNING METHOD	Case Method
TIMEFRAME	
ASSESSMENT WEIGHT	50
SUB-CPMK	To understand a type of thematic map, namely the geological map, and to compare it with field conditions.
TASK DESCRIPTION	Conducting field observations typically encompasses several important aspects for understanding the geological and geomorphological conditions of an area.
TASK IMPLEMENTATION STEPS	1. Geological Structure Observation Rock Types: Identification of rock types in the field (igneous, sedimentary, or metamorphic), including texture, composition, and grain size. Rock Strata: Observation of the sequence and orientation of rock layers (stratigraphy), including the strike and dip of each layer. Geological Structure: Observation of geological structures such as faults, folds, joints, and shear zones; measurement of direction and dip angle where possible. 2. Geomorphological Description Landforms: Identification of major landforms (hills, valleys, plateaus, lowlands, river terraces, etc.). Geomorphological Processes: Notes on currently active geomorphological processes (erosion, sedimentation, landslides, coastal abrasion, or weathering). Topography and Elevation: Measurement and recording of altitude at specific points and description of slope and water flow patterns. 3. Measurement and Mapping Geological Map: Using a geological compass to sketch a simple geological map with information on dip direction and other geological features. Topographic Profile: Producing a topographic profile with attention to slope, elevation, and distance between observation points. Strike and Dip Measurement: Strike is the horizontal direction of rock layers; dip is the angle of inclination. These are important for understanding rock layer structure. 4. Rock and Soil Sampling Collecting rock and soil samples from several observation points for further laboratory analysis. The location, visual characteristics, and geological context of each sample are recorded. 5. Hydrological Conditions Observation of water sources (rivers, springs, lakes). Assessment of water flow patterns, riverbank erosion, sedimentation, and water-rock interactions. 6. Other Factors Vegetation: Notes on vegetation at the observation site, as it may provide clues about geomorphological processes. Human Activity: Impacts of human activities (mining, excavation, or construction) that affect the landscape and geomorphological processes. All data are integrated to obtain a general picture of the geological history of the area and the ongoing geomorphological processes. Observation results are typically presented in the form of a report, geological map, and topographic profile.
DETAILS OF REQUIRED OUTPUTS	Report and presentation of results.
ASSESSMENT INDICATORS, CRITERIA, AND WEIGHTS	Attendance; accuracy of field observations; results report.
IMPLEMENTATION SCHEDULE	Note: The total number of days in one semester is $16 \times 7 = 112$ days.
Field Course	9 x 50 minutes
OTHER NOTES	
REFERENCES	1. Handoyo, Agus Harsolumakso. 2001. Buku Pedoman Geologi Lapangan. Departemen Teknik Geologi, ITB, Bandung. 2. Sudarja Adiwikarta. (1983). Dasar-Dasar Geomorfologi. Jurusan Pendidikan Geografi FPIPS IKIP Bandung: 1-12. 3. Stahler, Alan and Arthur. (1979). Element of Physical Geography. John Wiley and Sons. Pp. 347, 373.

