



Universitas Negeri Surabaya
Faculty of Social and Legal Sciences
Geography Education Undergraduate Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																																													
General Geology	8720202062	Compulsory Curriculum	T=2 P=0 ECTS=3.18	1	July 17, 2024																																																													
AUTHORIZATION	SP Developer	Subjects - National	Course Cluster Coordinator	Study Program Coordinator																																																														
	Drs. Agus Sutedjo, M.Si.		Drs. Bambang Hariyanto, M.Pd.	Dr. Nugroho Hari Purnomo, S.P., M.Si.																																																														
Learning model	Project Based Learning																																																																	
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																	
	PLO-7	Able to make appropriate decisions to resolve regional problems in a spatial context based on an integrated geographic approach																																																																
	Program Objectives (PO)																																																																	
	PO - 1	Collaborative geological analysis capabilities																																																																
	PLO-PO Matrix																																																																	
		<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">P.O</td> <td colspan="4" style="padding: 5px;">PLO-7</td> </tr> <tr> <td style="padding: 5px;">PO-1</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>				P.O	PLO-7				PO-1																																																							
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PO Matrix at the end of each learning stage (Sub-PO)																																																																		
	<table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="padding: 5px;">P.O</td> <td colspan="16" style="padding: 5px;">Week</td> </tr> <tr> <td style="padding: 5px;">1</td><td style="padding: 5px;">2</td><td style="padding: 5px;">3</td><td style="padding: 5px;">4</td><td style="padding: 5px;">5</td><td style="padding: 5px;">6</td><td style="padding: 5px;">7</td><td style="padding: 5px;">8</td><td style="padding: 5px;">9</td><td style="padding: 5px;">10</td><td style="padding: 5px;">11</td><td style="padding: 5px;">12</td><td style="padding: 5px;">13</td><td style="padding: 5px;">14</td><td style="padding: 5px;">15</td><td style="padding: 5px;">16</td> </tr> <tr> <td style="padding: 5px;">PO-1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>																P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																
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Short Course Description	<p>This course is a course that discusses exogenous and endogenous forces which are forces that change the face of the earth into a new face of the earth. This course also discusses the structure of the earth as a result of endogenous forces and geological time, fossils, and geological laws in order to deepen understanding of the layering field. The discussion in more detail is the weathering processes, followed by erosion and deposition carried out by water, wind or snow/ice/glaciers which will continuously form a new surface of the earth. Furthermore, the new earth face that is formed simultaneously or in the following period will be damaged by tectonic, volcanic and seismic forces to form another new earth face, which is the next discussion. Discussion about unconformities, faults, folds or cracks in the earth, which are earth structures formed due to destructive (endogenous) forces, is the next discussion. In studying these topics, the use of information technology (IT) is very helpful in making mastery easier and is used to convey information on the results of the analysis. Achievement of learning competencies by using a project based learning approach with inquiry, discussion, question and answer, assignment methods. Assessment is carried out by performance and written tests.</p>																																																																	
References	Main :																																																																	
	<ol style="list-style-type: none"> 1. Afnimar, 2009, Seismologi, Bandung, Penerbit ITB 2. Santoso, D., 2002, Pengantar Teknik Geofisika, Bandung, Penerbit ITB 3. Sutedjo, A., 2017, Geologi Struktur . Buku Ajar, Surabaya, FISh Unesa 4. Fossen. H.,2015, Structural Geology, Glasgow, Cambridge University Press 5. Santoso, D., 2002, Pengantar Teknik Geofisika, Bandung, Penerbit ITB 6. Sukandarrumidi, Kotta, H.Z., Maulana,F.W., 2014, Geologi Umum Bagian Pertama, Yogyakarta, Gadjah Mada university Press 7. Sukandarrumidi, dkk, 2017, Geologi Umum Bagian Kedua, Yogyakarta, Gadjah Mada university Press 8. Petersen, J.F., Sack, D., Gabler, R.E., 2012, Physical Geography 10th Edition, Canada, Brooks/Cole, Cengage Learning 9. Schmincke, H. U., 2006, Volcanism, Berlin Heidelberg, Springer 																																																																	
	Supporters:																																																																	

1. Mulyaningsih, S., 2013, Pengantar Geologi Lingkungan, Yogyakarta, Panduan.
2. Suharyadi, 2006, Geologi Teknik, Yogyakarta, Biro Penerbit Teknik sipil Universitas Gadjah Mada.
3. Wicander and Monroe, 2013, Geol 2. Student Edition, Canada, Brooks/Cole, Cengage Learning

Supporting lecturer
Drs. Agus Sutedjo, M.Si.
Drs. Bambang Hariyanto, M.Pd.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (offline)	Online (online)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to analyze the characteristics of the layers of the earth	Accuracy of analyzing the characteristics of the earth's layers	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Form of Assessment : Participatory Activities</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Definition and Scope of Geology. 2. Origin of the earth 3. Physical properties of the Earth 4. Structure of the Earth</p> <p>References: 1. <i>Afnimar, 2009, Seismology, Bandung, ITB Publisher</i> 2. <i>Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press</i> 3. <i>Santoso, D., 2002, Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. <i>Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. <i>Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. <i>Petersen, JF, Sack, D., Gabler, RE, 2012, Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. <i>Schmincke, HU, 2006, Volcanism, Berlin Heidelberg, Springer</i> 8. <i>Sutedjo, A., 2017, Structural Geology, Textbook, Surabaya, FISH Unesa</i></p>	5%

2	Able to determine exogenous processes that occur in an area and determine the landforms that are formed.	Explain the meaning and causes of weathering 2.2. Analyzing factors that influence weathering 2.3. Determine the type of weathering that occurs and landforms that form in an area.	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Definition and causes of weathering 2. Factors that influence weathering 3. Types of weathering that occur and landforms that form in an area.</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta , Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook, Surabaya, FISH Unesa</i></p>	5%
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3	Able to determine exogenous processes that occur in an area and determine the landforms that are formed.	Explain the meaning and types of erosion 2.5. Analyze the erosion that occurs and the land forms formed in an area. 2.6. Explain the meaning and causes of deposition 2.7. Analyze the deposition that occurs and the land forms that are formed in an area.	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Forms of Assessment : Project Results Assessment / Product Assessment, Practical Assessment, Tests</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Definition and Types of Erosion 2. Erosion that occurs and land forms that form in an area. 3. Definition and causes of deposition 4. Analyze the deposition that occurs and the land forms that form in an area.</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook, Surabaya, FISH Unesa</i></p>	9%
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4	Able to analyze the distribution of tectonic movements on the face of the earth and the impacts caused by tectonic movements	1. Explain the meaning of plate tectonics 2. Explain the causes of tectonism 3. Analyze plate movement and the impacts it causes.	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Forms of Assessment : Project Results Assessment / Product Assessment, Practical Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Understanding plate tectonics .2. Causes of tectonism 3. Plate movement and the impacts it causes.</p> <p>References: 1. Afrimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology, Textbook, Surabaya, FISH Unesa</i></p>	7%
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5	Able to analyze the distribution of the impact of volcanic eruptions	1. Explain the meaning of volcanism and eruption. 2. Analyze the causes of volcanic eruptions based on the type of eruption. 3. Explain the impact of volcanic eruptions	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Understanding Volcanism and eruptions 2. Causes of volcanic eruptions based on the type of eruption. 3. Impact of volcanic eruptions</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook, Surabaya, FISH Unesa</i></p>	7%
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6	Able to determine the characteristics of earthquakes in an area based on data on seismograms	1. Explain the meaning and causes of Seismic 2. Analyze types of seism and their impacts in an area	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Forms of Assessment : Project Results Assessment / Product Assessment, Practical Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Definition and causes of seisms 2. Types of seisms and their impacts in an area</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook, Surabaya, FISH Unesa</i></p>	7%
7	Able to determine the characteristics of earthquakes in an area based on data on seismograms	Determine the characteristics of earthquakes based on data on seismograms	<p>Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS).</p> <p>Forms of Assessment : Project Results Assessment / Product Assessment, Practical Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: earthquake</p> <p>Bibliography: Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta, Gadjah Mada university Press</i></p>	8%

8	Midterm exam	accuracy based on the rubric	Criteria: Exact > 65 Form of Assessment : Portfolio Assessment, Test	Discussion 2 X 50		Material: basic geology Bibliography: Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One</i> , Yogyakarta, Gadjah Mada university Press	5%
9	Able to determine the age of the earth's crust based on fossils in an area	1. Explain the Geological Time Scale 2 Explain Life during the Geological Age 3 Explain the meaning of fossils and fossilization 4. Explain the types of fossils	Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS). Forms of Assessment : Project Results Assessment / Product Assessment, Practical Assessment	Lectures, questions and answers, and discussions 2 X 50		Material: 1. Geological Time Scale 2. Life during the Geological Age 3 Explaining the meaning of fossils and fossilization 6 . Explaining various types of fossils. References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One</i> , Yogyakarta , Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two</i> , Yogyakarta, Gadjah Mada university Press 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology, Textbook, Surabaya, FISH Unesa</i>	7%

10	Able to determine the sequence of formation of rock layers based on applicable geological laws	1. Explain the meaning of coating field. 2. Analyze the Bedding Plane based on dip and strike. 3. Explain the various types of incongruence	<p>Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS).</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Understanding the Layer Field. 2. Bedding areas based on dip and strike. 3. Types of Unconformities</p> <p>Literature: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology, Textbook, Surabaya, FISH Unesa</i></p>	5%
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11	Able to determine the sequence of formation of rock layers based on applicable geological laws	1. Determine the sequence of rock layers in a cross-section of the earth. 2. Explain the laws in geology. 3. Determine the geological laws that apply to a form of the earth's surface.	<p>Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS).</p> <p>Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Sequence of rock layers in a cross-section of the earth. 2. Laws in Geology 3. Geological laws that apply to a form of the earth's surface.</p> <p>References: 1. Afnimar, 2009, <i>Seismology</i>, Bandung, ITB Publisher 2. Fossen. H., 2015, <i>Structural Geology</i>, Glasgow, Cambridge University Press 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering</i>, Bandung, ITB Publishers 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One</i>, Yogyakarta , Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two</i>, Yogyakarta, Gadjah Mada university Press 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition</i>, Canada, Brooks/ Cole, Cengage Learning 7. Schmincke, HU, 2006, <i>Volcanism</i>, Berlin Heidelberg, Springer 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook</i>, Surabaya, FISH Unesa</p>	5%
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12	Able to analyze the forms of geological structures and their parts in an area	1. Explain the meaning, formation process, signs of faults.2. Analyze the shapes of faults and their parts	<p>Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS).</p> <p>Form of Assessment : Practice / Performance</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1 Definition, process of fault formation, signs of faults 2. Analyzing fault shapes and their parts</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta , Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology, Textbook, Surabaya, FISH Unesa</i></p>	5%
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13	Able to analyze the forms of geological structures and their parts in an area	Accuracy of structural analysis	<p>Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS).</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: Calculating lengthening and shortening of faults</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta , Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook, Surabaya, FISB Unesa</i></p>	5%
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14	Able to analyze the forms of geological structures and their parts in an area	1. Explain the meaning and process of forming folds. 2. Analyze the shapes of folds and their parts.	<p>Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS).</p> <p>Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Definition and process of forming folds 2. Forms of folds and their parts.</p> <p>References: 1. Afnimar, 2009, <i>Seismology, Bandung, ITB Publisher</i> 2. Fossen. H., 2015, <i>Structural Geology, Glasgow, Cambridge University Press</i> 3. Santoso, D., 2002, <i>Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, <i>General Geology Part One, Yogyakarta , Gadjah Mada university Press</i> 5. Sukandarrumidi, et al, 2017, <i>General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. Petersen, JF, Sack, D., Gabler, RE, 2012, <i>Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. Schmincke, HU, 2006, <i>Volcanism, Berlin Heidelberg, Springer</i> 8. Sutedjo, A., 2017, <i>Structural Geology. Textbook, Surabaya, FISH Unesa</i></p>	5%
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15	Able to analyze the forms of geological structures and their parts in an area	1. Explain the meaning and process of Joint, Cleavage, Liniation, Foliation. 2. Explain the various types of Joint, Cleavage, Liniation, Foliation	<p>Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS).</p> <p>Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: 1. Definition and process of Joint, Cleavage, Liniation, Foliation. 2. Various types of Joints, Cleavage, Liniation, Foliation</p> <p>Literature: 1. <i>Afnimar, 2009, Seismology, Bandung, ITB Publisher</i> 2. <i>Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press</i> 3. <i>Santoso, D., 2002, Introduction to Geophysical Engineering, Bandung, ITB Publishers</i> 4. <i>Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta, Gadjah Mada university Press</i> 5. <i>Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press</i> 6. <i>Petersen, JF, Sack, D., Gabler, RE, 2012, Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning</i> 7. <i>Schmincke, HU, 2006, Volcanism, Berlin Heidelberg, Springer</i> 8. <i>Sutedjo, A., 2017, Structural Geology. Textbook, Surabaya, FISH Unesa</i></p>	10%
16	UAS	Accuracy of analysis	<p>Criteria: Exact > 65</p> <p>Form of Assessment : Test</p>	Lectures, questions and answers, and discussions 2 X 50		<p>Material: environmental geology</p> <p>Reference: <i>Mulyaningsih, S., 2013, Introduction to Environmental Geology, Yogyakarta, Guide.</i></p>	5%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	15%
2.	Project Results Assessment / Product Assessment	49.5%
3.	Portfolio Assessment	2.5%

4.	Practical Assessment	17.5%
5.	Practice / Performance	5%
6.	Test	10.5%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.