Document Code



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

UNESA																		
		SEM	ES	STE	R	LE	AR	NI	N	G F	PLA	١N						
Courses		CODE			С	ours	e Fam	ily		Cred	lit We	eight		SE	MEST	ER	Co	mpilation te
General Geol	ogy	8720202062					ulsory			T=2	P=0	ECT	S=3.18	3	1		Jul	y 17, 2024
AUTHORIZAT	TON	SP Develope	er					ti o	Alrs	e Clu	ıster	Coord	dinator	Stu	ıdy Pr	ogran	1 Coo	rdinator
		Drs. Agus Su	tedjo	o, M.S	Si.				s. Ba Pd.	amba	ıng H	ariyan	to,	[Dr. Nuç	groho I S.P.,	Hari P M.Si.	Purnomo,
Learning model	Project Based Learn	ing																
Program Learning	PLO study program	that is char	ged	to th	е со	urse	•											
Outcomes (PLO)		e to make appro graphic approa		te de	cisio	ns to	resolve	e reg	giona	al pro	blem	s in a	spatial (conte	xt bas	ed on a	an inte	egrated
	Program Objectives	s (PO)																
	PO - 1 Colla	aborative geolo	gica	l ana	lysis	сара	bilities											
	PLO-PO Matrix																	
		P.O PLO-7 PO-1																
	PO Matrix at the en	d of each lea	rnin	g sta	age (Sub	-PO)											
		P.O									We	ek						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	<u> </u>	PO-1																
Short Course Description	This course is a cours a new face of the ear time, fossils, and geo weathering processes form a new surface of damaged by tectonic, unconformities, faults, the next discussion. It is used to convey infolierning approach w	th. This course logical laws in , followed by e the earth. Fur volcanic and so folds or cracks a studying thes prmation on the	e also ordo rosic therr eism s in t e top e res	o discer to on and on and on and one	deep deep the t ces to arth, the us	es the ben u bosition new e o forr which se of e and	e struct indersta on carri earth fa n anoth h are e inform alysis.	ure of andired of the control of the	of the ng of the ng of the new structure of the new new new new new new new new new ne	ne ea of the oy wa is for earth acture chnole ment	rth as laye ter, w med s faces s for ogy (I of lea	s a restring find or simultand which med danger T) is varning	sult of eld. The snowling aneous of is the ue to defend compe	endog e disc ce/gla ly or i next estruc pful ir	enous cussion ciers v n the f discus ctive (e n maki es by	forces n in m which followin sion. E endoge ng ma using	s and ore divided will congress per Discussenous attery a pro	geological etail is the ontinuously riod will be ssion about of forces, is easier and ject based
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	Supporters:																	

- Mulyaningsih, S.,2013, Pengantar Geologi Lingkungan, Yogyakarta, Panduan.
 Suharyadi, 2006, Geologi Teknik, Yogyakarta, Biro Penerbit Teknik sipil Universitas Gadjah Mada.
 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	Eva	aluation	Lear Stude	elp Learning, rning methods, ent Assignments, stimated time]	Learning materials	Assessment Weight (%)
	(Sub-PO)	Indicator	Criteria & Form	Offline (offline)	Online (online)	[References]	
(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	Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). Form of Assessment: Participatory Activities	Lectures, questions and answers, and discussions 2 X 50		Material: 1. Definition and Scope of Geology, 2. Origin of the earth 3. Physical properties of the Earth 4. Structure of the Earth References: 1. Afnimar, 2009, Seismology, Bandung, ITB Publisher 2. Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press 3. Santoso, D., 2002, Introduction to Geophysical Engineering, Bandung, ITB Publishers 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 6. Petersen, JF, Sack, D., Gabler, RE, 2012, Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning 7. Schmincke, HU, 2006, Volcanism, Berlin Heidelberg, Springer 8. Sutedjo, A., 2017, Structural Geology, Textbook, Surabaya, FISH Unesa	5%

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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 Explain the meaning and types of erosion 2.5. Analyze the erosion that occurs and the land forms Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination discussions 2 X 50	Material: 1. 9% Definition and Types of Erosion 2. Erosion that occurs and land
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formed in an (UTS).	in an area. 3.
area. 2.6.	Definition and
Explain the	
meaning and 1 of 113 of	causes of
causes of Assessment :	deposition 4.
deposition Project Results	Analyze the
2.7. Analyze Assessment /	deposition that
the deposition Product	occurs and the
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former that are I lactical	form in an area.
forms that are Assessment, Tests	References: 1.
formed in an	Afnimar, 2009,
area.	Seismology,
	Bandung, ITB
	Publisher 2.
	Fossen. H.,
	2015, Structural
	Geology,
	Glasgow,
	Cambridge
	University Press
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	2002,
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	Geophysical
	Engineering,
	Bandung, ITB
	Publishers 4.
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	Kotta, HZ,
	Maulana, FW,
	2014, General
	Geology Part
	One,
	Yogyakarta ,
	Gadjah Mada
	university Press
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	Sukandarrumidi,
	et al, 2017,
	General
	Geology Part
	Two,
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	Gadjah Mada
	university Press
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	Sack, D.,
	Gabler, RE,
	2012, Physical
	Geography 10th
	Edition,
	Canada,
	Brooks/ Cole,
	Cengage
	Learning 7.
	Schmincke, HU,
	2006,
	Volcanism,
	Berlin
	Heidelberg,
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	Springer 8.
	Sutedjo, A.,
	2017, Structural
	Geology.
	Textbook,
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4	Able to analyze the	1. Explain the	Criteria:	Lectures,		Material: 1.	7%
	distribution of	meaning of	The assessment	questions		Understanding	
	tectonic	plate tectonics	contained in	and			
	movements on the	2. Explain the	Assessment			plate tectonics	
	face of the earth	causes of	Sheet 1 is carried	answers,		.2. Causes of	
	and the impacts	tectonism 3.		and		tectonism 3.	
	caused by tectonic	Analyze plate	out during the	discussions		Plate movement	
			Mid-Semester	2 X 50			
	movements	movement	Examination	2 X 50		and the impacts	
		and the	(UTS).			it causes.	
		impacts it				References: 1.	
		causes.	Forms of			Afnimar, 2009,	
			Assessment :				
						Seismology,	
			Project Results			Bandung, ITB	
			Assessment /			Publisher 2.	
			Product			Fossen. H.,	
			Assessment,			2015, Structural	
			Practical			Geology,	
			Assessment			Glasgow,	
						Cambridge	
						University Press	
						3. Santoso, D.,	
						2002,	
						Introduction to	
						Geophysical	
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						Engineering,	
						Bandung, ITB	
						Publishers 4.	
						Sukandarrumidi,	
						Kotta, HZ,	
						Maulana, FW,	
						2014, General	
						Geology Part	
						One,	
						Yogyakarta ,	
						Gadjah Mada	
						university Press	
						5.	
						Sukandarrumidi,	
						et al, 2017,	
						General	
						Geology Part	
						Two,	
						Yogyakarta,	
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l						university Press	
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l						2012, Physical	
l						Geography 10th	
l						Edition,	
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l						Cengage	
l						Learning 7.	
						Schmincke, HU,	
				1		2006,	
						Volcanism,	
						Berlin	
						Heidelberg,	
						Springer 8.	
l						Sutedjo, A.,	
ı						2017, Structural	
				1	1	Geology.	
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						Textbook,	
						Textbook, Surabaya, FISH Unesa	

5	Able to analyze the	1. Explain the	Criteria:	Lectures,	Material: 1.	7%
	distribution of the	meaning of volcanism and	The assessment	questions	Understanding	
	impact of volcanic		contained in	and	Volcanism and	
	eruptions	eruption. 2.	Assessment	answers,	eruptions 2.	
		Analyze the causes of	Sheet 1 is carried	and	Causes of	
		volcanic	out during the	discussions	volcanic	
		eruptions	Mid-Semester Examination	2 X 50	eruptions based	
		based on the	(UTS).	- A 30	on the type of	
		type of	(013).			
		eruption. 3.	Form of		eruption. 3.	
		Explain the	Form of		Impact of	
		impact of	Assessment :		volcanic	
		volcanic	Project Results		eruptions	
		eruptions	Assessment /		References: 1.	
		•	Product		Afnimar, 2009,	
			Assessment		Seismology,	
					Bandung, ITB	
					Publisher 2.	
					Fossen. H.,	
					2015, Structural	
					Geology,	
					Glasgow,	
					Cambridge	
					University Press	
					3. Santoso, D.,	
					2002,	
					Introduction to	
					Geophysical	
					Engineering,	
					Bandung, ITB	
					Publishers 4.	
					Sukandarrumidi,	
					Kotta, HZ,	
					Maulana, FW,	
					2014, General	
					Geology Part	
					One,	
					Yogyakarta ,	
					Gadjah Mada	
					university Press	
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					Sukandarrumidi,	
					et al, 2017,	
					General	
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					Yogyakarta,	
					Gadjah Mada	
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					Sack, D.,	
					Gabler, RE,	
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					Canada,	
					Brooks/ Cole,	
					Cengage	
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					Schmincke, HU,	
					2006,	
					Volcanism,	
					Berlin	
					Heidelberg,	
					Springer 8.	
					Sutedjo, A.,	
					2017, Structural	
					Geology.	
					Textbook,	
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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	Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). Forms of Assessment: Project Results Assessment / Product Assessment, Practical Assessment	Lectures, questions and answers, and discussions 2 X 50	Material: 1. Definition and causes of seisms 2. Types of seisms 2. Types of seisms and their impacts in an area References: 1. Afnimar, 2009, Seismology, Seismology, Bandung, ITB Publisher 2. Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press 3. Santoso, D., 2002, Introduction to Geophysical Engineering, Bandung, ITB Publishers 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta , Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 6. Petersen, JF, Sack, D., Gabler, RE, 2012, Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning 7. Schmincke, HU, 2006, Volcanism, Berlin Heidelberg, Springer 8. Sutedjo, A., 2017, Structural Geology. Textbook, Surabaya, FISH Unesa	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	Criteria: The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). Forms of Assessment: Project Results Assessment / Product Assessment, Practical Assessment	Lectures, questions and answers, and discussions 2 X 50	Material: earthquake Bibliography: Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta, Gadjah Mada university Press	8%

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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, General Geology Part One, 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, Seismology, Bandung, ITB Publisher 2. Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press 3. Santoso, D., 2002, Introduction to Geophysical Engineering, Bandung, ITB Publishers 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 6. Petersen, JF, Sack, D., Gabler, RE, 2012, Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning 7. Schmincke, HU, 2006, Volcanism, Berlin Heidelberg, Springer 8. Sutedjo, A., 2017, Structural Geology. Textbook, Surabaya, FISH Unesa	7%

10	Able to determine	1. Explain the	Criteria:	Lectures,		Material: 1.	5%
	the sequence of	meaning of	The assessment	questions		Understanding	2,0
	formation of rock	coating field.	contained in	and		the Layer Field.	
	layers based on	2. Analyze the	Assessment	I I			
	applicable	Bedding	Sheet 2 is carried	answers,		2. Bedding	
	geological laws	Plane based	out during the	and		areas based on	
	goological lario	on dip and	Final Semester	discussions		dip and strike. 3.	
		strike. 3.	Examination	2 X 50		Types of	
		Explain the		2 / 00		Unconformities	
		various types	(UAS).				
			_			Literature: 1.	
		of	Form of			Afnimar, 2009,	
		incongruence	Assessment:			Seismology,	
			Project Results			Bandung, ITB	
			Assessment /			Publisher 2.	
			Product			Fossen. H.,	
			Assessment			2015, Structural	
						Geology,	
						Glasgow,	
						Cambridge	
						University Press	
						3. Santoso, D.,	
						2002,	
						Introduction to	
						Geophysical	
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						Bandung, ITB	
						Publishers 4.	
						Sukandarrumidi,	
						Kotta, HZ,	
						Maulana, FW,	
						2014, General	
						Geology Part	
						One,	
						Yogyakarta ,	
						Gadjah Mada	
						university Press	
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						5.	
						Sukandarrumidi,	
						et al, 2017,	
						General	
						Geology Part	
						Two,	
						Yogyakarta,	
						Gadjah Mada	
						university Press	
						6. Petersen, JF,	
						Sack, D.,	
						Gabler, RE,	
						2012, Physical	
						Geography 10th	
						Edition,	
						Canada,	
						Brooks/ Cole,	
						Cengage	
						Learning 7.	
						Schmincke, HU,	
						2006,	
						Volcanism,	
						Berlin	
						Heidelberg,	
						Springer 8.	
						Sutedjo, A.,	
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the sequence of formation of rock layers based on applicable geological laws the sequence of frock 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. Form of Assessment Assessment Assessment Sheet 2 is carried out during the Final Semester Examination (UAS). Form of Assessment Participatory Activities, Project Results Assessment / Product Assessment / Product Assessment Assessment References: 1. Afnimar, 2009, Seismology, Bandung, ITB Publisher 2. Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press 3. Santoso, D., 2002, Introduction to			Г			Ţ Ţ	1
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12	Able to analyze the forms of geological	1. Explain the	Criteria:	Lectures,		Material: 1	5%
	structures and	meaning, formation	The assessment	questions		Definition,	
	their parts in an	process, signs	contained in	and		process of fault	
	area	of faults.2.	Assessment Sheet 2 is carried	answers,		formation, signs	
	arca	Analyze the	out during the	and		of faults 2.	
		shapes of	Final Semester	discussions		Analyzing fault	
		faults and	Examination	2 X 50		shapes and	
		their parts	(UAS).			their parts	
			, ,			References: 1.	
			Form of			Afnimar, 2009,	
			Assessment :			Seismology,	
			Practice /			Bandung, ITB	
			Performance			Publisher 2.	
						Fossen. H.,	
						2015, Structural	
						Geology,	
						Glasgow,	
						Cambridge	
						University Press	
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						2002,	
						Introduction to	
						Geophysical	
						Engineering,	
						Bandung, ITB	
						Publishers 4.	
						Sukandarrumidi,	
						Kotta, HZ,	
						Maulana, FW,	
						2014, General	
						Geology Part	
						One,	
						Yogyakarta ,	
						Gadjah Mada	
						university Press	
						5.	
						Sukandarrumidi,	
						et al, 2017,	
						General	
						Geology Part	
						Two,	
						Yogyakarta,	
						Gadjah Mada	
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						6. Petersen, JF,	
						Sack, D.,	
						Gabler, RE,	
						2012, Physical	
						Geography 10th	
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						Canada,	
						Brooks/ Cole,	
						Cengage	
						Learning 7.	
						Schmincke, HU,	
						2006,	
						Volcanism,	
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						2017, Structural	
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structures and their parts in an area and their parts in a faults in a faults in a fault in a parts in a fault in a faul	13	Able to analyze the	Accuracy of		Lectures,		5%
structures and their parts in an area analysis contained in Assessment in their parts in an area and their parts in an area and in the parts in an area and in their parts in an area and in the parts in a faults in the parts in a parts in an area and in the parts in a parts in an area and in anumers. I arthur a parts in an area and in anumers. I arthur a parts in and a lengthem and short in a parts in a parts in a parts in a pa		forms of geological			questions		
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14	Able to analyze the	1. Explain the	Criteria:	Lectures,		Material: 1.	5%
±++	forms of geological	meaning and	The assessment			Definition and	3%0
	structures and	process of	contained in	questions			
	their parts in an	forming folds.	Assessment	and		process of	
	area	2. Analyze the	Sheet 2 is carried	answers,		forming folds 2.	
		shapes of	out during the	and		Forms of folds	
		folds and their	Final Semester	discussions		and their parts.	
		parts.	Examination	2 X 50		References: 1.	
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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	Criteria: The assessment contained in Assessment Sheet 2 is carried out during the Final Semester Examination (UAS). Form of Assessment: Participatory Activities, Project Results Assessment / Product Assessment	Lectures, questions and answers, and discussions 2 X 50	Material: 1. Definition and process of Joint, Cleavage, Liniation, Foliation. 2. Various types of Joints, Cleavage, Liniation, Foliation. 2. Various types of Joints, Cleavage, Liniation, Foliation Literature: 1. Afnimar, 2009, Seismology, Bandung, ITB Publisher 2. Fossen. H., 2015, Structural Geology, Glasgow, Cambridge University Press 3. Santoso, D., 2002, Introduction to Geophysical Engineering, Bandung, ITB Publishers 4. Sukandarrumidi, Kotta, HZ, Maulana, FW, 2014, General Geology Part One, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 5. Sukandarrumidi, et al, 2017, General Geology Part Two, Yogyakarta, Gadjah Mada university Press 6. Petersen, JF, Sack, D., Gabler, RE, 2012, Physical Geography 10th Edition, Canada, Brooks/ Cole, Cengage Learning 7. Schmincke, HU, 2006, Volcanism, Berlin Heidelberg, Springer 8. Sutedjo, A., 2017, Structural Geology. Textbook, Surabaya, FISH Unesa	10%
16	UAS	Accuracy of analysis	Criteria: Exact > 65 Form of Assessment : Test	Lectures, questions and answers, and discussions 2 X 50	Material: environmental geology Reference: Mulyaningsih, S., 2013, Introduction to Environmental Geology, Yogyakarta, Guide.	5%

Evaluation Percentage Recap: Project Based Learning

Evaluation i crecitage recap. I roject basea 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

- 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.
- 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.
- 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.
- 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%.
- ${\bf 12.}\ \ {\bf TM}\text{=}{\bf Face}\ to\ face,\ {\bf PT}\text{=}{\bf Structured}\ assignments,\ {\bf BM}\text{=}{\bf Independent}\ study.$