



INOVASI MODEL PEMBELAJARAN

Profesional, Melayani, Bersinergi

Course Modul of GEOMORPHOLOGY AND LANDSCAPE ANALISYS

EVEN SEMESTER 2021/2022

course coordinator:
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Teaching team:
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Study Program of Agrotechnology, Faculty of Agriculture
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Jalan Raya Rungkut Madya-Gunung Anyar.Surabaya
2021

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1 EDUCATION LEARNING OUTCOME (ELO)

ELO-A1	<i>be defending country character, namely the love of the motherland, national and state awareness, believes in Pancasila as the ideology of the state, willing to sacrifice for the nation and the state, and has the initial ability to defend the country.</i>
ELO-A2	<i>Responsible for work in the field of expertise independently</i>
ELO-A3	<i>able to maintain and develop collaborative networks with supervisors, colleagues, colleagues both inside and outside the institution;</i>
ELO-4	<i>able to apply knowledge of Plant Sciences and basic concepts of Plant Production, Soil and basic concepts of land resources, the concept of crop protection against pests and diseases in an integrated manner</i>
ELO-5	<i>able to master the principles of the application of agricultural technology to solve problems in agriculture</i>
ELO-6	<i>able to analyze, plan and implement lowland farming systems refers to the principles of sustainable agriculture, modern , raise local wisdom, effectively and productively</i>
ELO-7	<i>able to study the implementation of sustainable agriculture systems Base on scientific rules application, procedures and ethics in order to produce solutions, ideas, and designs based on the results of information and data analysis</i>
ELO-8	<i>The ability to master plant propagation technology, and crop management in accordance with the agro-climate zone</i>
ELO - 9	<i>The ability to identify, formulate, analyze and solve problems in the field of land resources</i>
ELO - 10	<i>Ability to diagnose, analyze and solve plant pest problems</i>
ELO - 11	<i>The ability to handle the current principles and issues of lowland agriculture and its environmental problems</i>
ELO - 12	<i>Mastery of technology and be able to communicate with the community in solving agricultural problems both oral and written</i>

2. COURSE IDENTIFICATION

1. Name of course, Code,
2. ELO performance Indicator
3. ELO charged to the Constitutional Course, this data can be obtained from the ELO course matrix
4. Learning Model used
5. Assessment Form

Name of Course	:	GEOMORPHOLOGY AND LANDSCAPE ANALYSIS	
Course Code	:	PG201216	
SCS	:	3	
Learning Model	:	Lecture Discussion Discuse group Learning Individual Learning Practice Problem base learning evaluations	
ELO			
		ELO-6	able to analyze, plan and implement lowland farming systems refers to the principles of sustainable agriculture, modern, raise local wisdom, effectively and productively
		ELO - 9	The ability to identify, formulate, analyze and solve problems in the field of land resources
		ELO - 11	The ability to handle the current principles and issues of lowland agriculture and its environmental problems

ELO	Performance Indicator
ELO 6	Students are able to describe and analyze geomorphological processes and the classification of landscape units
	Students are able to describe, and apply the role and benefits of geomorphology and landscape analysis in agriculture.
ELO 9	Students are able to identify and analyze landscapes as the basis for planning sustainable agricultural development
ELO 11	Students are able to describe the principles of geomorphological processes and the classification of landscape units for the development of environmentally friendly agriculture


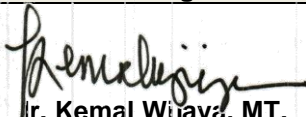
3. MATRIX ELO - SUBJECT

Course Name	Code	scs	smt	ELO 1	ELO 2	ELO 3	ELO 4	ELO 5	ELO 6	ELO 7	ELO 8	ELO 9	ELO 10	ELO 11	ELO 12
Geomorphology dan Landscape Analysis	PG201216	3	V						x			x		x	

4. RENCANA PEMBELAJARAN SEMESTER

41. Determination of ELO Weight on Course

COURSE NAME : GEOMORPHOLOGY AND LANDSCAPE ANALYSIS

		UNIVERSITY OF PEMBANGUNAN NASIONAL “VETERAN” EAST JAVA FACULTY OF AGRICULTURE STUDY PROGRAM OF AGROTECHNOLOGY LEVEL STUDY PROGRAM : GRADUATE						
COURSE		CODE	COURSE CLUSTER		WEIGHT		SEMESTER	Date of forming
GEOMORPHOLOGY AND LANDSCAPE ANALYSIS		PG201216	SOIL SCIENCE		2	1	V (five)	20/08/2021
AUTHORIZATION		Developer of RP		Coordinator of Course Learning Outcome		Coordinator of Study Program		
				 Ir. Kemal Wijaya, MT.		Dr.Ir. Bakti Wisnu Widjajani, MP		
Learning Outcome (LO)	Study Programs that are charged to the Course							
	ELO 6	Able to analyze, plan and implement lowland farming systems refers to the principles of sustainable agriculture, modern, raise local wisdom, effectively and productively						
	ELO 9	The ability to identify, formulate, analyze and solve problems in the field of land resources						
	ELO 11	The ability to handle the current principles and issues of lowland agriculture and its environmental problems						
	ELO Course ; Students are able to describe, plan, analyze and apply geomorphological information and landscape analysis in the field of environmentally sustainable agriculture							

	Sub-Study Program Learning Outcome 1. Students are able to describe the processes of geomorphology and the classification of landscape units. 2. Students are able to describe the role and benefits of geomorphology in agriculture. 3. Students are able to apply the classification of supportive landscapes in agriculture 4. Students are able to apply landscape analysis in land resource management 5. Students are able to carry out landscape analysis as a basis for planning agricultural development	
Course Description	Geomorphology and Landscape Analysis courses are given to equip students to be able to analyze and theoretically apply processes that occur in landscapes (landscapes) how to describe landscapes and make classifications of landscapes. This course has 3 credits of lectures which include: the scope of the basics of geology, theory of earth formation, theory of plate tectonics, geological structures, landscape forming agents, classification of landscape orders, geomorphological units, soil movements, groundwater, eye water, analysis of river flow patterns, understanding of the properties and contour patterns and the relationship of geomorphological units with river flow forms, analysis based on topographic maps and maps of the earth, landscape analysis software applications, and satellite imagery as well as direct field observations and able to apply classification , description and genesis of soil on the earth's surface. To achieve competence and strengthen the deepening of Geomorphology and Landscape Analysis course material, students are given structured tasks and practicum of contour making and making descriptions and interpretations of contour patterns, software-based analysis and satellite imagery from the internet which requires students to actively explore reference books by utilizing information technology as well as soft and hard copies of references from assigned handbooks as well as modules, journal articles and teaching materials that have been determined by the supporting lecturers. Geomorphology and Landscape Analysis Lecture set the Handbook as a handbook and published it on elearning.upnjatim.ac.id	
Course / Study Material	At the end of this course, students are expected to be able to describe, plan, analyze and apply, classifying landscapes. Able to apply landscape analysis methods as information on agricultural land resources. Able to apply and utilize geomorphological information and the results of landscape analysis for decision making in a sustainable and environmentally friendly agricultural planning.	
References :	Main: Richard John Huggett, 2007 Fundamentals Of Geomorphology, Routledge Fundamentals of Physical Geography, Second Edition Tommaso Piacentini and Enrico Miccadei (Editors), 2012, Studies On Environmental And Applied Geomorphology Randall J Schaetzl and Sharon Anderson, 2005, Soils Genesis and Geomorphology, Cambridge University Press Hardjowigeno, 2003. Klasifikasi Tanah dan Pedogenesis CV. Akademika Pressindo, Jakarta. Munir, 2003 Tanah-tanah Utama di Indonesia Soil Survey Staff, USDA. Keys to Soil Taxonomy Buol, S.W; F.D. Hole, and R.J. Mc.Cracken. 1980. The IOWA State University Press, Ames. Soil Genesis and Classification Supported : Articles journals/proceedings : Geomorphology and Landscape Analysis Internet :: Geomorphology and Landscape Analysis	
Learning Media	Software :	Hardware :
	MS Word, MS Excel, Surfer v 15.1	LCD Projektor & PC/Laptop Practical tools and materials and Practicum Guideline
Team Teaching	Ir. Kemal Wijaya, MT. dan Haidar Fari Aditya, SP. M.Sc.	
Requirements course	none	

Week Lectur er	Final abilities at each learning stage (Sub-ELO Course)	Evaluation		Forms of Learning, Learning Methods and Student Assignments [Estimated time]		Learning materials [References]	Weight((%)
		Evaluation Indicator	Criteria & Assessment Form	On line	On line		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1, Kemal	Introsduction Able to understand and describe the concepts and theories of geomorphology and landscape analysis	the ability to describe and apply appropriately and correctly about the role and benefits of geomorphology and landscape analysis in agriculture	Assessing students' ability to accurately and correctly describe geomorphology and landscape analysis	Showing video animation downloaded from youtube	Explaining Power Point slide about Semester Lesson Plan college contract Presentation on: the relationship and benefits of geomorphology and landscape analysis in agriculture. Describe and explain about geomorphological processes and the concept of landscape analysis	Geomorpholo gical concepts and theories and landscape analysis	5% .
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Independent Learning = 2 X 60 minutes		.	
2, Kemal	Plate Tectonic Theory Able to understand and explain the natural forces that make up rocks, geological structures and the earth's surface in Lampeng Tectonic Theory (T	Ability to understand and describe concepts and theories supporting Plate Tectonic Theory: ➤ Continental Drift, ➤ Sea Floor Spreading ➤ Sea-floor fault and volcanoes zones ➤ Plate collision zone ➤ Earthquake zone ➤ Volcano zone ➤ Hotspot phenomenon ➤ Paleomagnetism	Giving lecture assignments, measuring students' abilities in describing the theory of Plate Tectonics.	Showing video animation about plate tectonic theory, downloaded from youtube	Explaining Power Point slide about the relationship and benefits of geomorphology and landscape analysis in agriculture. Describe and explain about geomorphological processes and the concept of landscape analysis		5% .
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Independent Learning = 2 X 60 minutes			

3, Kemal	Petrology Able to understand and explain the natural forces that form rocks, on the earth's surface	The process of rock formation on earth Rock types and rock cycles Rock classification Rock weathering processes	Giving lecture assignments, measuring student's ability to understand the process of rock formation and classification	Animated video showing about rock formation and process downloaded from youtube	Explaining Power Point slide about rock formation, rock cycle and rock classification		5 %
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Independent Learning = 2 X 60 minutes			
Kemal Fari	Practical Introduction	Explanation of practice rules		Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
4, Kemal	Geological Structure Able to understand and explain the natural forces that make up the geological structure on earth	Horizontal layer Tilt layer Fault Folds Uncoformity Rock intrusion	Giving lecture assignments, to measure student's ability to describe and analyze geological structures	Animated viewing of types and models of geological structures downloaded from youtube	Explaining Power Point slide about kinds of geology structural and process of geology structural formation		5 %
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Independent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
5. Kemal	Landscape Unit Classification Able to describe, classify and analyze features and characteristics of landscapes	Davis Concept Landscape unit forming agent Landscape unit classification system Landscape unit map	Giving lecture assignments, measuring student's ability to analyze and apply the landscape unit classification system	Animated viewing of types and models of landscape unit	Explaining Power Point slide about kinds of landscape classification		5%
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Independent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
6, Kemal	Land movement Able to describe, classify and analyze the characteristics and characteristics of soil movements that affect land resources	Definition of land movement Classification of land movement Land movement trigger factor	Giving lecture assignments, about student's ability to analyze the land movement classification system	Animated viewing of types and models of landslide	Explaining Power Point slide about kinds of landslide and the trigger of landslide formation		5%
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Independent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes			

				Structured Assignment = 1 x 50 minutes			
7. Kemal	Groundwater Able to describe, classify and analyze the characteristics and characteristics of groundwater that affect land resources	Definition of groundwater Aquifers, permeable and impermeable layers Ground water level (water table) Artesian wells and springs Water catchment area	Giving lecture assignments, about students' ability to analyze the process of groundwater formation	Penayangan video animasi tentang macam dan klasifikasi gerakan tanah dari youtube	Paparan PP Tutorial materi kuliah, 1 Macam dan klasifikasi gerakan tanah. Faktor faktor pemicu gerakan tanah		5%
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Indipendent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
8	Mid-Semester Examination Written Test Evaluation of the achievement of ELO imposed on the course						20%
9 Fari	River Patern Able to describe, analyze characteristics and interpret river patterns	Kinds of river pattern Analysis and interpretation of river patterns Effect of rock structure on river patterns River density analysis	Giving lecture assignments, about student's ability about model and analyze landscapes based on river patterns	Penayangan video animasi tentang model pola aliran sungai dari youtube	Paparan PP Tutorial materi kuliah, 1. Macam pola aliran sungai. 2.Klasifikasi pola alirang sungai 3. Intepretasi pola aliran sungai		5%
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Indipendent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
10 Fari	Watershed able to describe, analyze and determine the boundaries of watersheds	Definition of watershed Watershed boundaries based on topograpic maps Watershed Map		Penayangan video animasi tentang batas DAS berdasarkan simulasi dari aplikasi Surfer	Paparan PP Tutorial materi kuliah, 1. Macam bentuk DAS 2. Klasifikasi DAS 3. Intepretasi DAS		5%
				Course Classical = 2 X 50 minutes Structured Assignment = 2 X 60 minutes Indipendent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
11,12	Topographic Map Analysis	Definition of topographic map		Penayangan	Paparan PP Tutorial		10%

Fari	able to describe and analyze landscapes based on topographic map	Definition of contour lines Contour line properties Contour pattern analysis Slope length analysis Slope shape analysis		video animasi tentang batas DAS berdasarkan simulasi dari aplikasi Surfer	materi kuliah, 1. Sifat kontur 2. Poka kontur 3. Kelerengan		
				Course Classical = 2 X 50 minutes Structured Assigment = 2 X 60 minutes Indipendent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
13 Fari	Landscape slope analysis able to measure, describe, analyze landscape units	Definition of slope Measuring slope Classification of slope Measuring slope length Describe the slope shape Applying slope map		Penayangan video animasi tentang kelerengan berdasarkan simulasi dari aplikasi Surfer	Paparan PP Tutorial materi kuliah, 1. Pengukuran kelerengan 2. Pengukuran panjang lereng 3. Pengamatan bentuk lereng	Metode pengendalian OPT secara mekanik, kimua dan terpadu	5%
				Course Classical = 2 X 50 minutes Structured Assigment = 2 X 60 minutes Indipendent Learning = 2 X 60 minutes			
Kemal Fari				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes			
14, 15 Fari	Satellite image analysis able to describe and analyze landscapes based on image satellite	google earth satellite image Landscape unit analysis based on satellite image Interpretation of landscape units based on satelllite imagery Interpretation of geological structures based on the shape of the landscape. Interpretation of the geological structure of the landscape unit based on rock lineage patterns		Penayangan video animasi tentang analisis bentang alam	Paparan PP Tutorial materi kuliah, 1. citra satelit 2. Intepretasi citra satelit	..	10%
				Course Classical = 2 X 50 minutes Structured Assigment = 2 X 60 minutes Indipendent Learning = 2 X 60 minutes			
				Studio Practice Studio Activitie =1 x 120 minutes Structured Assignment = 1 x 50 minutes		.	
16	Final Semester Examination Written Test Evaluation of the achievement of ELO imposed on the course						20%

Total	.100%
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Notes

1. **Education Learning Outcomes** of Graduates of Study Programs (ELO) are abilities possessed by each graduate of Study Programs which are the internalization of attitudes, mastery of knowledge and skills in accordance with the level of study programs obtained through the learning process.
2. **Learning Outcomes** of Graduates of Study Program are abilities possessed by each graduate of Study Program which are the internalization of attitudes, mastery of knowledge and skills in accordance with the level of study programs obtained through the learning process.
3. **The ELO** that is charged to the course is a number of learning outcomes for graduates of the study program (ELO- Study Programs) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
4. **Course Learning Outcome** (CLO) is the ability that is described specifically from the Study Programs that is charged to the course, and is specific to the study material or learning material of the course.
5. **Sub-Course Learning Outcome** (Sub-CLO) is the ability that is specifically described from the CLO 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.
6. **Indicators for assessing** the ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
7. **Assessment Criteria** are benchmarks used as measures or benchmarks for learning achievement in assessment based on predetermined indicators. Assessment criteria are guidelines for assessors so that the assessment is consistent and unbiased. Criteria can be either quantitative or qualitative.
8. **Forms of assessment:** test and non-test.
9. **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.
10. **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.
11. **Learning Materials** are details or descriptions of study materials that can be presented in the form of several subjects and sub-topics.
12. **The weight of the assessment** is the percentage of assessment of each achievement of the sub-CPMK which is proportional to the level of difficulty of achieving the sub-CPMK, and the total is 100%.
13. Classical, PStructured assignments, Independent learning.

Result of ELO weight calculation

Course Name	Code	scs	smt	ELO 1	ELO 2	ELO 3	ELO 4	ELO 5	ELO 6	ELO 7	ELO 8	ELO 9	ELO 10	ELO 11	ELO 12
Geomorphology dan Landscape Analysis	PG201216	3	5						30%			30%		40%	

ASSESSMENT AND EVALUATION PLAN

ASSESSMENT AND EVALUATION PLAN Graduate Study Program : Agrotechnology Faculty of Agriculture University of Pembangunan Nasional East Java			RA&E
Code : PG201216	SCS weight (C/P): (2/1)	Course Cluster: Soil Science	Edition: August 2021
AUTHORIZATION	RA & E Compiler Ir, Kemal Wijaya MT	Coordinator of RA&E Dr.Ir. Bakti Wisnu W.	Coordinator of Study Program Dr.Ir. Bakti W W

Week (1)	Sub CLO (2)	Assesment Form (3)	Weight (%) (4)
1	able to describe the processes of geomorphology and the classification of landscape units.	Assesment 1: 1. make a description about the Plate Tectonic Theory (maximum 50 words) 2. make a descriptionthe about the genesis of the earth's surface (maximum 50 words) 3. make a descriptionthe benefits of geomorphological knowledge for agriculture, especially soil science (maximum 100 words)	20%
2	able to describe the role and benefits of geomorphology in agriculture.	Assesment 2 1. make a description about the process of forming the earth's surface. (maximum 30 words) 2. make a descriptionabout the rock cycle (maximum 30 words) 3. make a description about rock clasification (just 6 words)	20%
3	able to apply the classification of supportive landscapes in agriculture	Assesment 3 1. make a description about the meaning of the present is the key to the past. (max 20 words) 2. make a description about Davis Concept (max 20 words) 3. What do you understand about Geomorphological Units (in 5 words/phrases)	20%
4	able to apply landscape analysis in land resource management	Assesment 4 1. make a description about contour lines. (max 20 words) 2. make a description about river flow patterns (maximum 20 words) 3. make a description about the relationship between river flow patterns and the geological structure of the rock beneath it (maximum 30 words)	20%
5	able to carry out landscape analysis as a basis for planning agricultural development	Assesment 5 1. make a description about watershed boundaries. (max 20 words) 2. make a description about groundwater subsidence (maximum 20 words) 3. make a description about rock slides (max 30 words)	20%

RUBRIC ARGUMENT

GRADE	SCORE	PERFORMANCE INDICATOR
More Less	< 41	The argument does not make sense and there is no logical relationship
Less	41–55	The argument is quite logical, but it doesn't make sense
Enough	56– 70	Logical argument, plausible, but less innovative
Good	71- 85	The argument: Logical argument, reasonable, and innovative
Very Good (Excellent)	86 - 100	The argument: Logical argument, innovative and can be easily implemented in the real world

COOPERATION ABILITY IN TEAM

ASSESSMENT OF TEAM WORK

Peer name be assessed
NRP – peer be assessed

No	Aspect be assessed	1	2	3	4	5	6	Grade in score (50-100)
1	Team work towards achieving LO (Learning Outcomes)							
2	Demonstrate effective interpersonal skills							
3	Very active in group discussion participation							
4	Sharing of learning resources owned by group members							
5	Help groups if they miss information compared to other groups							
6	Provide constructive feedback (to build) and provide solutions if there are difficulties Provide constructive feedback(to build) and provide							
7	Work hard for group interests							
8	Want to receive feedback openly (not emotionally) Want to receive feedback openly (not emotionally)							
9	React positively to criticize feedback react positively to criticize feedback							
10	Manage emotions well							
11	Always stick to his / her point of view							
12	Make efforts to improve behavior while working in groups							
13	Demonstrate the ability to change views in receiving new information							
14	Present on time at each group job							
15	Demonstrate responsibility and commitment							
16	Honest							

1 = very bad / very non-constructive
 6 = very good / very constructive

