



**Kampus
Merdeka**
INDONESIA JAYA

FAKULTAS
PERTANIAN

COURSE PORTFOLIO

INTRODUCTION OF SOILS SCIENCE

KODE MK FP-191107

BACHELOR DEGREE PROGRAM
AGROTECHNOLOGY
FACULTY OF AGRICULTURE

**UNIVERSITAS PEMBANGUNAN NASIONAL
"VETERAN" JAWA TIMUR**

Course Identity

Module name	Dasar Ilmu Tanah Introduction of Soils Sciences
Module level	Sarjana Bachelor Degrees/Undergraduated
Code	FP-191107 FP-191107
Course (if applicable)	Dasar Ilmu Tanah Introduction of Soils Sciences
Semester	Semester 5 5 th Semester
Person Responsible for the Module	Dr. Ir. Bakti Wisnu W., MP.
Lecturer	Dr. Ir. Bakti Wisnu W., MP. Dr. Ir. Rosyida Priyadarsini, MP. Dr. Ir. Wanti Mindari, MP. Ir. Siswanto, MT. Fitri Wijayanti, SP., MP. Haidar Fari Aditya, SP. MP.
Language	Bahasa Indonesia English
Relation to Curriculum	Sarjana, Semester 5 Undergraduate degree program, mandatory, 5 th Semester
Type of Teaching, Contact Hours	Learning methods: lectures, discussions, assignments, case study, practice
Workload	Kuliah tatap muka : 2 x 50 = 100 menit per minggu <i>Lectures</i> : 2 x 50 = 100 minutes per week Tugas : 1 x 50 = 50 menit per minggu <i>Assignments</i> : 1 x 50 = 50 minutes per week Studi kasus : 1 x 50 = 50 menit per minggu <i>Case study</i> : 1 x 50 = 50 minutes per minggu Praktikum : 1 x 170 = 170 menit per minggu <i>Practice</i> : 1 x 170 = 170 minutes per minggu
Credit point	3 Satuan Kredit Semester 3 credits or 4.8 ETC
Requirements according to the	A Students must have attended at least 80% of the lectures to sit in the exams

examination regulations	
Mandatory prerequisites	-
Learning outcomes and their corresponding PLOs	<p>PLO 1 Berkomitmen pada nilai-nilai etika, moral, dan karakter bela negara sebagai profesional di bidang pertanian <i>PLO 1 Commit to the ethical, moral, and character values of defending the country as a professional in agriculture</i></p> <p>PLO 4 Mampu menerapkan ilmu ilmu tanaman, konsep dasar produksi tanaman, ilmu sumber daya lahan dan tanah, serta konsep terpadu perlindungan tanaman terhadap hama dan penyakit. <i>PLO 4 Able to apply the knowledge of plant Science, the basic concepts of plant production, land resources and soil science, and integrated concept of plant protection against of pests and diseases</i></p> <p>PLO 5 Mampu menerapkan prinsip-prinsip teknologi pertanian untuk menyelesaikan permasalahan pertanian <i>PLO 5 Able to apply the principles of agricultural technology to solve agricultural problems</i></p>
Content	<p>Mengkaji makna dan peranan tanah dalam kehidupan manusia dan ilmu-ilmu lainnya. Pembentukan dan perkembangan tanah. Komponen tanah. Batuan dan mineral. Sifat fisik, kimia, organisme dan bahan organik tanah. Dasar-dasar kesuburan dan pemupukan tanah. Dasar-dasar konservasi tanah dan air. Penggunaan lahan dan klasifikasi lahan secara umum.</p> <p>Pembentukan dan komponen tanah; Profil tanah; sifat fisik, kimia dan biologi tanah; siklus unsur hara tanah; pemupukan dan pemupukan; permasalahan lahan dan lingkungan hidup.</p> <p><i>Examining the meaning and role of land in human life and other sciences. Soil formation and development. Soil components. Rocks and minerals. Physical, chemical properties, organisms and organic matter of soil. Basics of soil fertility and fertilization. Basics of soil and water conservation. Land use and general land classification. Soil formation and components; Soil profile; physical, chemical and biological properties of soil; soil nutrient cycles; fertilizing and fertilizing; land and environmental problems.</i></p>
Study and examination requirements and forms of examination	Learning methods: lectures, discussions, assignments (review, case study), practice
Media employed	OS Windows, PPT, Video, Buku referensi, LCD, sound system, ATK
Reading list	<ol style="list-style-type: none"> 1. Sutanto, R. 2005. Dasar-dasar Ilmu Tanah: Konsep dan Kenyataan. Kanisius. Yogyakarta. 2. Sarief, S. 1979. Ilmu Tanah Umum. Faperta Unpad. Bandung.

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| | <ol style="list-style-type: none">3. Notohadipoero, A. R. S. 1980. Pengantar Ilmu Tanah. Faperta UGM. Yogyakarta.4. Hardjowigeno, S. 1993. Klasifikasi Tanah Dan Pedogenesis. Akademika Pressindo. Jakarta.5. Rosmarkam, A. & N.W. Yuwono 2002. Ilmu Kesuburan Tanah. Kanisius. Yogyakarta.6. Arsyad, S. 1976. Pengawetan Tanah. IPB. Bogor. |
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UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN" JAWA TIMUR

Agriculture Faculty

Agrotechnology

Department

S1 AGROTEKNOLOGI

Course	CODE	Course Type	BOBOT (sks)		SEMESTER	Tgl Penyusunan
DASAR ILMU TANAH	FP-191107	Management Resources	2	1	II (DUA)	23/01/2023
OTORISASI	Pengembang RP		Koordinator RMK		Ka PRODI	
	Dr. Ir. Bakti Wisnu W., MP. Dr. Ir. Rosyida Priyadarsini, MP. Dr. Ir. Wanti Mindari, MP. Ir. Siswanto, MT. Fitri Wijayanti, SP., MP. Haidar Fari Aditya, SP. MP.		Dr. Ir. Bakti Wisnu W., MP.		Dr. Ir. Bakti Wisnu W., MP.	
Program Learning Outcome	PLO	1. Commit to the ethical, moral, and character values of defending the country as a professional in agriculture (1) 2. Able to apply the knowledge of plant Science, the basic concepts of plant production, land resources and soil science, and integrated concept of plant protection against of pests and diseases (4) 3. Able to apply the principles of agricultural technology to solve agricultural problems (5)				
	CLO	1. Students are able to explain the concept of soil formation and its components. 2. Students are able to explain the physical, chemical and biological properties of soil. 3. Students are able to recognize and determine the physical and chemical properties of soil. 4. Students are able to explain the concepts of plant nutrition and plant fertilization. 5. Students are able to explain land and environmental problems.				

Short Description of Course	Examining the meaning and role of land in human life and other sciences. Soil formation and development. Soil components. Rocks and minerals. Physical, chemical properties, organisms and organic matter of soil. Basics of soil fertility and fertilization. Basics of soil and water conservation. Land use and general land classification.
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Topics/ Study Materials	Soil formation and components; Soil profile; physical, chemical and biological properties of soil; soil nutrient cycles; fertilizing and fertilizing; land and environmental problems.						
References	Main:						
	<ol style="list-style-type: none"> 1. Sutanto, R. 2005. Dasar-dasar Ilmu Tanah: Konsep dan Kenyataan. Kanisius. Yogyakarta. 2. Sarief, S. 1979. Ilmu Tanah Umum. Faperta Unpad. Bandung. 3. Notohadipoero, A. R. S. 1980. Pengantar Ilmu Tanah. Faperta UGM. Yogyakarta. 						
Instructional Media	Perangkat lunak :			Perangkat keras :			
Team Teaching	Dr. Ir. Bakti Wisnu W., MP.; Dr. Ir. Rosyda P., MP.; Ir. Siswanto, MT.; Ir. Purnomo Edi Sasongko, MP.; Ir. Setyo Budi S., MP.; Ir. Purwadi, MP., Haidar Fari Aditya, SP., MP., Fitri Wijayanti, SP., MP.						
Required courses							
Week ...	Final abilities at each learning stage (Sub-CPMK)	Evaluation		Learning Forms, Methods Student Learning and Assignments [Estimated time]		Learning materials [Reference]	Assess ment Weight (%)
		Assessment Indicators	Criteria and Forms of Assessment	Daring (online)	Luring (offline)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to define and explain the meaning, components and functions of soil as the basis of soil science (CPMK 1)	Students are able to explain the meaning, components and functions of soil Soil Concept	Non test Compile a summary and create a basic flow diagram of soil science	Viewing YouTube https://www.youtube.com/watch?v=ReiDEB7CDE0 About Introduction to soil and weathering	Lectures explain the Semester Learning Plan, lecture contracts	1, 4	6%

		<ol style="list-style-type: none"> 1. Understanding soil (pedology and edaphology) 2. Soil composition 3. Soil as a natural resource and plant growth medium 4. Development of Soil Science 		<p>TM = 2 x 50 minutes BT = 60 minutes BM = 60 minutes</p>			
2, 3	Able to explain the processes and factors of soil formation (CPMK 1)	<p>Students are able to understand the process and explain the factors of soil formation</p> <p>Soil Formation and Development</p> <ol style="list-style-type: none"> 1. Preparation Materials land 2. Soil Parent Material 3. Soil forming factors 4. Soil Formation Process 5. Soil Profile 6. Soil Taxonomy 	<p>Not a test</p> <p>Collecting assignments</p> <ol style="list-style-type: none"> 1. Observation student participation in discussions 2. Ability to convey discussion results 	<p>Viewing YouTube https://www.youtube.com/watch?v=tgoD0FfE_FU about soil formation processes</p>	<ul style="list-style-type: none"> - PPT Presentation/video lecture material - Create groups and Discussion group 	1, 2, 4	6%
				<p>TM = 2 x 50 minutes BT = 60 minutes BM = 60 minutes</p>			

4,5	Able to determine soil components based on soil physical properties (CPMK 2, 3)	<p>Students are able to know and explain the components of the physical properties of soil</p> <p>Soil Physical Properties</p> <ol style="list-style-type: none"> 1. Soil texture 2. Soil structure 3. Relationship between soil mass and volume (BJ, BI, porosity) 4. Soil consistency 5. Air 6. Temperature 7. Soil color 8. Groundwater 	<p>Non-test</p> <p>Collect assignments</p> <ol style="list-style-type: none"> 1. Observation student participation in discussions 2. ability to convey discussion results 	<p>Viewing Youtube https://www.youtube.com/watch?v=D8ex1r7axso & https://www.youtube.com/watch?v=yRPnEiW5mlc about soil physic</p> <p>Course Practicum TM = 2 x 2 x 50 2 x 1 x100 BT = 2 x 60 2 x 1 x 70 BM = 2 x 60</p>	<ul style="list-style-type: none"> - PP Presentation /course material videos - Create groups and group discussion 		5% 20%
6	Able to determine the mineral components of clay (CPMK 2, 3)	<p>Students are able to identify and explain the components of clay minerals in soil</p> <p>Clay Minerals</p> <ol style="list-style-type: none"> 1. Understanding 2. Role 3. Load source 4. Types and characteristics 	<p>Non-test</p> <p>Collect assignments</p> <ol style="list-style-type: none"> 1. Observation student participation in discussions 2. ability to convey discussion results 	<p>Viewing Youtube https://www.youtube.com/watch?v=nSmAkBhPj0 about clay mineralogy</p> <p>Course Practicum TM = 2 x 2 x 50 2 x 1 x100 BT = 2 x 60 2 x 1 x 70 BM = 2 x 60</p>	<ul style="list-style-type: none"> - PP Presentation /course material videos - Create groups and group discussion 		5% 20%
7	Able to determine soil components based on their chemical properties (CPMK 2, 3)	<p>Students are able to know and explain the components of soil chemical properties</p>	<p>Non-testing</p> <p>Collect assignments</p> <ol style="list-style-type: none"> 1. Observation of student participants in the discussion 2. Ability to convey discussion results 	<p>Viewing Youtube https://www.youtube.com/watch?v=CijD5qmeD_Y about soil chemical properties</p>	<ul style="list-style-type: none"> - PP Presentation /course material videos - Create groups and group discussion 		5% 20%

		Soil Chemical Properties 1. Chemical elements that make up soil 2. Periodic system of earth elements 3. Chemical bond 4. Valence 5. Electromagnetism					
				Course TM = 2 x 2 x 50 100 BT = 2 x 60 BM = 2 x 60	Practicum 2 x 1 x 2 x 1 x 70		
8	Midterm Evaluation						
9	Able to determine soil components based on soil chemical properties (CPMK 2,3)	Students are able to know and explain the components of soil chemical properties Soil Chemical Properties 1. Land CEC 2. Soil pH 3. Soil EC 4. Alkaline soil and acid soil, 5. Soil buffer 6. Liming 7. Acidification	Non-test Collect assignments 1. Observation student participation in discussions 2. ability to convey discussion results	Viewing Youtube https://www.youtube.com/watch?v=M7YRIdk5q70 about soil chemistry	- PP Presentation /course material videos - Create groups and group discussion		
				Course TM = 2 x 2 x 50 100 BT = 2 x 60 BM = 2 x 60	Practicum 2 x 1 x 2 x 1 x 70		
10, 11	Able to determine soil components based on soil biological properties (CPMK 2)	Students are able to know and explain the components/biological properties of soil Biological Properties of Soil 1. Classification of living bodies 2. The role of living bodies	Non-test Collect assignments 1. Observation student participation in discussions 2. ability to convey discussion results	Reviewing Youtube Video https://www.youtube.com/watch?v=98ZGaT7C6io about soil biology	- PP Presentation /course material videos - Create groups and group discussion		
				TM = 2 x 50 minutes BT = 60 minutes			

		3. BO sources 4. Process and results of weathering 5. The role and factors of soil BO 6. C/N Ratio		BM = 60 minutes			
12-13	Able to determine and explain plant nutritional components, as well as fertilizer and fertilization (CPMK 3, 4)	1. Students are able to know and understand the nutritional components of plants 2. Students are able to explain the types of fertilizer and how to fertilize them	Non-test Collect assignments 1. Observation student participation in discussions 2. Ability to convey discussion results	Reviewing Youtube Video https://www.youtube.com/watch?v=iphOwk3yn10 about plant nutrition https://www.youtube.com/watch?v=TjbxOEE0Ch0 about fertilizer and soil fertility	- PP presentation/course material videos - Create groups and group discussions		
				TM = 2 x 50 minutes BT = 60 minutes BM = 60 minutes			
14	Students are able to know and explain land surveying and evaluation	Students are able to understand and explain land surveys and evaluations	Non-test Collect assignments 1. Observation student participation in discussions 2. Ability to convey discussion results		- PPT presentation/course material videos - Create groups and group discussions		
				Course TM = 2 x 2 x 50 100 BT = 2 x 60 BM = 2 x 60	Practicum 2 x 1 x 2 x 1 x 70		

14	Able to explain soil and water conservation strategies (CPMK 2, 3, 5)	<p>Students are able to determine soil and water conservation mechanically (physically), chemically and vegetationally (biologically)</p> <p>Soil and Water Conservation</p> <ol style="list-style-type: none"> 1. Understanding Conservation 2. Biological conservation 3. Chemical Conservation 4. Physical conservation 	<p>Non-test Collect assignments</p> <ol style="list-style-type: none"> 1. Observation student participation in discussions 2. Ability to convey discussion results 	<p>Reviewing Youtube Video https://www.youtube.com/watch?v=QHyK2M8yiQE about soil conservation</p> <p>TM = 2 x 50 minutes BT = 60 minutes BM = 60 minutes</p>	<ul style="list-style-type: none"> - PPT presentation/course material videos - Create groups and group discussions 		
15	Able to explain land and environmental problems as well as strategies for solving the problems (CPMK 2,3, 5)	<p>Students can identify environmental problems and diagnose the causes of problems, and then describe how to deal with problems based on knowledge of soil science</p> <p>Soil Science and Environmental Management</p> <ol style="list-style-type: none"> 1. Identify environmental problems 2. The role of soil science 3. Diagnose and treat environmental problems 	<p>Non-test Collect assignments</p> <ol style="list-style-type: none"> 1. Observation student participation in discussions 2. Ability to convey discussion results 	<p>Reviewing Youtube Video https://www.youtube.com/watch?v=8kZXuLlobA8 about why soil matters</p> <p>TM = 2 x 50 minutes BT = 60 minutes BM = 60 minutes</p>	<ul style="list-style-type: none"> - PPT presentation/course material videos - Create groups and group discussions 		

16	End of Semester Evaluation Evaluation of CPL achievements is charged to the course	
Total		

Notes :

1. **Learning outcomes program (PLO)** is the ability possessed by every PRODI graduate which is the internalization of attitudes, mastery of knowledge and skills according to the level of the study program obtained through the learning process.
2. **The PLO imposed on courses are** several learning outcomes of study program graduates (CPL-PRODI) which are used for the formation/development of courses consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Course Learning Outcomes (CLO)** is an ability that is specifically explained in the CPL assigned to the course, and is specific to the subject matter or learning materials in that course.
4. **Assessment indicators is** assessing student learning process abilities and outcomes is a specific and measurable statement that identifies the ability or performance of student learning outcomes accompanied by evidence.
5. **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 impartial. The criteria can be quantitative or qualitative.
6. **Forms of assessment:** test and non-test.
7. **Form of learning:** Course, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
8. **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.
9. **Learning Materials are** details or descriptions of learning materials which can be presented in the form of several topics and sub-topics.
10. **Assessment weight** is the percentage of assessment of achievement of each sub-CPMK whose size is proportional to the level of difficulty of achieving that sub-CPMK, and the total is 100%.
11. **TM**=Face to face, **PT**=Structured assignment, **BM**=Independent study.

ASSESSMENT AND EVALUATION

	ASSESSMENT AND EVALUATION UNDERGRADUATE PROGRAMME, AGROTECHNOLOGY, AGRICULTURE FACULTY		AP&E
	Introduction of Soil Science		
			Edition :
Code :	Credit Unit (Course/Practises : (2/1)	Class of Course : soil Science	Semester :
Authorization	Author of AP&E	Coordinator of CCS	Coordinator of Study Program

Task/ Weeks	Sub CP-MK (2)	Bentuk Asesmen (Penilain) (3)	Bobot(%) (4)
1	Capable in explaining the concept and principle of the concept of soil formation and its components (CLO-1)	Assignment 1: Test describing accurately and correctly related with: the concept of soil formation, soils component, soil formation factors and formation process	15%
2	capable to explain the physical, chemical and biological properties of soil (CLO-2).	Assignment 2 Test describing accurately and correctly related with: the physical, chemical and biological properties of soil	15%
3	Capable to recognize and determine the physical and chemical properties of soil (CLO-3).	Assignment 3 describing accurately and correctly related with to recognize and determine the physical and chemical properties of soil	20%
4	capable recognize and determine the physical and chemical properties of soil (CLO-4).	Assignment 4 describing accurately and correctly related with recognize and determine the physical and chemical properties of soil	25%
5	capable to explain land and environmental problems (CLO-5)	Assignment 5 capable to find environmental and soils problem, analyze the problems and find	25%

Examples Mid Exam



**FAKULTAS PERTANIAN UPN "VETERAN" JAWA TIMUR
SOAL EVALUASI AKHIR SEMESTER GENAP TA. 2020/2021**

MATA KULIAH : Dasar Ilmu Tanah
 PROGRAM PENDIDIKAN : PERTANIAN
 PRODI / SEMESTER : AGRIBISNIS / III Kelas E
 HARI / TANGGAL : Senin / 16 Oktober 2023
 WAKTU : 09.25 – 10.40 (75 MENIT)
 SIFAT : Luring
 DOSEN : Fitri Wijayanti, SP, MP & Dr. Ir. Purnomo Edi Sasongko, MP.

Petunjuk :

1. Kerjakan dengan singkat dan jelas
2. Pada bagian kanan atas lembar jawaban tuliska NAMA, NPM, MATA KULIAH, KELAS
3. Kerjakan pada kertas A4 dan **tulis tangan dengan tulisan yang rapi.**
4. Jawaban harus ditulis pada form lembar jawaban dan disimpan dalam format pdf dengan nama file **NPM_Kelas**
 Jawaban dilarang berupa copy-paste dari materi perkuliahan (ppt), laporan, sesama peserta ujian dan dari sumber-sumber lain di internet, dan bila terbukti melanggar, maka nilai Evaluasi Tengah Semester dinyatakan nihil.

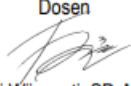
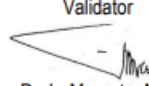
Capaian Pembelajaran Mata Kuliah (CPMK):

1. Mahasiswa mampu menjelaskan konsep pembentukan dan komponen tanah
2. Mahasiswa mampu menjelaskan sifat fisik, kimia dan biologi tanah
3. Mahasiswa mampu mengenal dan menentukan sifat fisik dan kimia tanah
4. Mahasiswa mampu menjelaskan permasalahan tanah dan lingkungan.

Soal	CPMK1	CPMK2	CPMK3	CPMK4	Bobot
No. 1	X				20
No. 2	X				20
No. 3		X			20
No. 4		X	X		20
No. 5		X	X	X	20

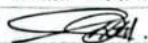
Soal :

1. Jelaskan pengertian tentang tanah berdasarkan pendekatan sebagai bagian alam dan Pertanian gambarkan susunan tanah beserta penjelasannya?
2. Bagaimana proses terjadinya pelapukan tanah? Sebut dan jelaskan faktor apa sajakah yang dapat mempengaruhi pelapukan tanah?
3. Jelaskan dan Gambar bagian- bagian dari penampang tanah?
4. Partikel penyusun tanah (pasir, debu, liat) merupakan karakteristik fisika tanah yang penting bagi pertumbuhan tanaman. Jelaskan bagaimana hubungan antara bahan partikel penyusun tanah-air tanah- keseimbangan udara, air, dan padatan
5. Liat merupakan partikel tanah yang paling reaktif yang disebabkan karena besarnya luas permukaan dan tingginya muatan listrik. Jelaskan mengapa hal tersebut bisa terjadi dan bagaimana hubungannya dengan nilai KTK dan kesuburan tanah.

Acuan	Soal ini dibuat oleh	Ditinjau & divalidasi oleh
1. Kurikulum 2. Silabus 3. RPS	Dosen  Fitri Wijayanti, SP, MP.	Validator  Dr. Ir. Maroeto, MP.

Example Students Answer

FAKULTAS PERTANIAN
LEMBAR JAWABAN UTS / UAS (GASAL / GENAP)

Mata Ujian : Dasar Ilmu Tanah
Semester/Prodi : III / Agribisnis
Hari/Tanggal : Kamis / 19 Oktober 2023
NPM : 22024010009
Nama Mahasiswa : Beni Azzah
Tandatangan : 

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1. Tanah adalah bagian penting dari ekosistem alam dan merupakan pondasi bagi pertanian. Tanah tempat bagi berbagai tumbuh-tumbuhan dan hewan, serta menyediakan nutrisi dan dukungan fisik yang diperlukan untuk pertumbuhan tanaman. Pertanian sangat bergantung pada kualitas tanah untuk menghasilkan makanan dan produk pertanian lainnya. Kesehatan tanah sangat mempengaruhi produktivitas dan keberlanjutan lingkungan. Dari segi bagian alam, tanah komponen utama dari lingkungan alam. Tanah terdiri dari bahan organik, mineral, air, dan udara. Tanah memainkan peran integral dalam menjaga ekosistem alam yang seimbang.

2. Proses terjadinya pelapukan tanah

- 1) Pelapukan fisik, terjadi ketika batuan terpapar pada perubahan suhu yang mengakibatkan retakan dan pecahan batuan. Perubahan suhu menyebabkan perluasan dan penyusutan.
- 2) Pelapukan kimia, merupakan proses dekomposisi dalam batuan dengan air, oksigen, suhu, dan bahan kimia lain. Pelapukan kimia mengubah komposisi mineral dalam batuan.

3) Pelapukan biologis, Tanaman, mikroorganisme, dan akar tumbuhan memainkan peran dalam pelapukan tanah.

Factor Pembentukan Tanah

Faktor yang mempengaruhi pelapukan tanah antara lain iklim, iklim berdampak besar dalam pelapukan tanah, iklim yang lembab dan banyak hujan dapat mempercepat proses pelapukan. Jenis batuan, jenis batuan mempengaruhi seberapa cepat proses pelapukan, batuan yang muda lebih mudah terurai. Vegetasi, tanaman dan akar dapat memecah batuan, tanaman berkontribusi pada pelapukan kimia. Topografi, kemiringan tanah dan topografi mempengaruhi aliran air hujan dan erosi tanah.

