

Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Biology Undergraduate Study Program

Document Code

SEMESTER I FARNING PLAN

Courses			CODE				Cou	urse F	amily			Cred	it We	ight		SEMESTER	Compilation Date
Plant Develo	oment Structure		462010	4173				ucture				T=4	P=0	ECTS	=6.36	2	July 17, 2024
AUTHORIZAT	TION		SP Dev	elope	r		- gev	elopm	ent	Co	ourse	Clust	er Co	ordina	tor	Study Prog Coordinato	ram r
			Dr. Rini	e Prati	iwi Pus	spitawa	ıti, M.S	Si.			r. Rinie .Si.	e Prat	iwi Pu	ıspitawa	ati,		Kuntjoro, S.Si., <i>I</i> .Si.
Learning model	Project Based L	.earnin	g														
Program Learning	PLO study pro	gram t	am that is charged to the course														
Outcomes (PLO)	PLO-5	Able to communicate scientific ideas, both orally and in writing using appropriate communication media according to the target, as a means of lifelong learning for academic self-development.															
. ,	PLO-7	Able to work independently and collaboratively, as well as responsibly, in completing various tasks in class, in the laboratory and in the field.															
	PLO-9 Able to work independently in the laboratory and develop relevant skills by applying bioethics and work safety																
	PLO-13		o demon ze currer				dge o	f cell a	nd mo	lecula	r biolo	gy, or	ganis	mal bio	logy, e	cology and e	volution to
	Program Object	ctives	(PO)														
	PLO-PO Matrix	(
	PO Matrix at th		P.O PLO-5 PLO-7 PLO-9 PLO-13 of each learning stage (Sub-PO)														
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Short Course Description	This course stud (anatomy) and the tissues and organizatice with em knowledge related	neir ďev Ins that phasis	relopmer make u _l on the p	nt relat p the (rocess	ed to so Organus of so	various um Nut Iving p	exter ritivun roblen	nal fac n and ns rela	ctors. ⁻ Organi ted to	The st um Re the co	udy ir eprodu oncep	ıclude ıctivu ts stu	s the n. Th died.	concer is cour At the 6	ot of sta se is p end of	ructure and f resented thro the lecture, s	unction of cells ough theory and
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Supporting lecturer

Dr. Rinie Pratiwi Puspitawati, M.Si. Ahmad Bashri, S.Pd., M.Si. Sari Kusuma Dewi, S.Si., M.Si.

Week-	Final abilities of each learning stage (Sub-PO)		duation	Learr Studer [Es	Ip Learning, ning methods, tt Assignments, timated time]	Learning materials [References	Assessment Weight (%)
	,	Indicator	Criteria & Form	Offline (offline)	Online (online)	J	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

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2	Understand the concept of plant	Describe embryonal tissue	Criteria:	Exploratory practicum with		5%
	tissue and at the	as the initial tissue	1.General	practicum with		
	same time master	of the plant body.	Assessment			
	problem solving	2. Explain the	Criteria:	solving		
	skills to carry out	concept of basic	Reports, practical	strategies		
	studies of plant	tissue 3. Explain	products and daily	regarding the		
	tissue regarding	the concept of	tests are assessed	cytological		
	their function and	periderm tissue 4.	as	characteristics		
	role. Have a	Explain the		of plant cells		
	responsible, independent and	concept of vascular tissue 5.	ASSIGNMENTS	related to their		
	honest attitude	Explain epidermal	with a weight of 30	function. 2.		
	towards	tissue 6. Identify	3. Essay questions	Presentation		
	performance in	parenchyma,	are assessed as	discussion		
	lectures on the	chlorenchyma,	daily tests and	about the		
	structure of plant	collenchyma,	USS is given a	cytological		
	development	sclerenchyma,	weight of 20	characteristics		
		aerenchyma	4. Student activities	of plant cells		
		tissue and their	and responses	related to their		
		logical reasons 7. Identify various		function.		
		types of vascular	during learning	6 X 50		
		tissue and their	activities,	5 A 50		
		logical reasons. 8.	especially			
		Explain the	practicums, are			
		relationship	assessed as			
		between various	participation,			
		types of covering	weight 20			
		tissue regarding their function and	5. Essay guestions			
		external	are assessed as			
		environment, 9.	US with a weight			
		Develop a plant	of 30			
		tissue observation	6. Performance			
		plan. 10. Explain				
		the relationship	tasks are carried			
		between plant	out integrated			
		tissue and its role	during learning			
		and the environment in				
		which it lives. 11.	Form of Assessment :			
		Draw conclusions	Project Results			
		based on the facts	Assessment / Product			
		collected about	Assessment			
		plant tissues				
		regarding their				
		role and the environment in				
		which they live.				
		12. Communicate				
		plant tissue				
		concepts related				
		to their role and				
		the environment in				
		which they live.				
		13. Compile the				
		results of				
		reflections on the lecture process				
		experienced.				
		onpononoca.				
			l		l	

3	Understand the concept of plant tissue and at the same time master problem solving skills to carry out studies of plant tissue regarding their function and role. Have a responsible,	1.Describe embryonal tissue. 2.Describes a permanent network 3.Identify various types of networks and	Criteria: 1.Assessment is based on benchmarks (PAP). The assessment components consist of subsummative,	Exploratory practicum with problem solving strategies regarding the cytological characteristics of plant cells related to their		5%
	independent and honest attitude towards performance in lectures on the structure of plant development	their logical reasons. 4. Explain the relationship between various types of cover tissue modifications regarding their function and external environment. 5. Explain the relationship between plant tissue and its role and the environment in which it lives. 6. Be present on time according to the lecture schedule 7. Collect assignments on time 8. Actively	assignment, summative and participation scores. 2. Participation assessment is an assessment of attitudes. 3. Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Project Results Assessment / Product Assessment	related to their function. Presentation discussion on the cytological characteristics of plant cells related to their function. 6 X 50		
		express opinions during discussions and presentations				

5 Understand the concept of plant concept of plant concept of plant secondary stem structure. Study the structure of stems related to their function and external not structure of stems are a responsible, independent and honest attitude methods are structure of plant development. 8 2 Presenting the environment of evelopment. 9 Presenting the environment of the environment. 9 Prepare problem solving reports related to the anatomical structure of stems related to the anatomical structure of stems. See a form of adaptation to the environment of the environment. 1 Prepare problem solving reports related to the anatomical structure of stems as a form of adaptation to the environment. 1 Prepare problem solving reports related to the anatomical structure of stems as a form of adaptation to the environment. 1 Prepare problem solving reports related to the anatomical structure of stems as a form of adaptation to the environment. 1 Prepare problem solving reports related to the anatomical structure of stems as a form of adaptation to the environment. 2 Prepare problem solving reports related to the anatomical structure of stems as a form of adaptation to the environment. 3 Prepare problem solving reports related to the anatomical structure of stems as a form of adaptation to the environment. 4 Project Results 8 Prepare problem 9 Presentation preformance is assignment product. 9 Prepare problem serving as an assignment product. 1 Project Results 2 Prepare product assignments on time assignments on time assignments on time and presentations.							
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discussions and			•				
and							
presentations							
			presentations				

	I		T	1	I	
6	Understand the concept of plant	1.Explain the	Criteria:	Exploratory		5%
	stems while	concept of	1.Assessment is	practicum with		
	mastering problem	primary and	based on	problem		
	solving skills to	secondary	benchmarks	solving		
	study the	stem structure.	(PAP). The	strategies		
	anatomical	Identify the	assessment	regarding the anatomy of		
	structure of stems related to their	network that	components			
	function and	makes up the	consist of sub-	plant stems related to their		
	external	stem along	summative,	function.		
	environment. Have	with its logical	assignment,	Presentation		
	a responsible,	reasons.	summative and	discussion on		
	independent and honest attitude	Presenting the	participation	the		
	towards	results of	scores.	morphological		
	performance in	studies on the	2.Participation	characteristics		
	lectures on the	anatomical	assessment is an	of plant stems		
	structure of plant development.	structure of	assessment of	related to their		
	development.	stems related	attitudes.	function		
		to their	3.Performance	6 X 50		
		adaptation to	assessment in the			
		the	form of			
		environment	presentation			
		4.Designing	performance is			
		solutions to	carried out			
		problems	integrated during			
		related to the	learning as an			
		anatomical	assignment grade			
		structure of	doorginion grade			
		stems as a	Form of Assessment :			
		form of	Project Results			
		adaptation to	Assessment / Product			
		the	Assessment			
		environment.				
		5.Prepare				
		problem				
		solving reports				
		related to the				
		anatomical				
		structure of				
		stems as a				
		form of				
		adaptation to				
		the				
		environment.				
		6.Be present on				
		time according				
		to the lecture				
		schedule				
		7.Collect				
		assignments				
		on time				
		8.Actively				
		express				
		opinions during				
		discussions				
		and				
		presentations				

7	Understand the	1.Compare the	Criteria:	Practical		5%
	concept of	process of	1.Assessment is	exploration of		
	morphological	forming tap	based on	root		
	characteristics of		benchmarks	morphology		
	plant roots while mastering problem	and fibrous		related to its		
	solving skills to	root systems.	(PAP). The	function.		
	conduct studies on	2.Distinguish	assessment	Presentation		
	the morphological	between the	components	discussion on		
	characteristics of	morphological	consist of sub-	the		
	plant roots related	structures of	summative,	morphological		
	to their function and external	tap roots and	assignment,	characteristics		
	environment. Have	fiber roots.	summative and	of roots		
	a responsible,	Identify the	participation	related to their		
	independent and	types of	scores.	function		
	honest attitude	specialized	2.Participation	6 X 50		
	towards	roots	assessment is an			
	performance in lectures on the	(photosynthetic	assessment of			
	structure of plant	roots, suction	attitudes.			
	development	roots,	3.Performance			
		contractile	assessment in the			
		roots, post	form of			
		roots, buttress	presentation			
		roots, knee	performance is			
			carried out			
		roots, and				
		hanging roots,	integrated during			
		reproductive	learning as an			
		roots).	assignment grade			
		4.Present the	Form of Assessment :			
		function or role				
		of specialized	Project Results Assessment / Product			
		root types for	Assessment			
		these plants	Assessment			
		(photosynthetic				
		roots, suction				
		roots,				
		contractile				
		roots, peg				
		roots, buttress				
		roots, knee				
		roots, and				
		hanging roots,				
		reproductive				
		roots).				
		5.Write down the				
		results of the				
		study, a logical				
		prediction of				
		the process of				
		forming				
		specialized				
		•				
		roots.				
		6.Be present on				
		time according				
		to the lecture				
		schedule				
		7.Collect				
		assignments				
		on time				
		8.Actively				
		express				
		opinions during				
		discussions				
		and				
		presentations				
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	LITC					400/
8	UTS		teria:			10%
			1.Assessment is	3 X 50		
			based on			
			benchmarks			
			(PAP). The			
			assessment			
			components			
			consist of sub-			
			summative,			
			assignment,			
			summative and			
			participation			
			scores.			
			2.Participation			
			assessment is an			
			assessment of			
			attitudes.			
			3.Performance			
			assessment in the			
			form of			
			presentation			
			performance is			
			carried out			
			integrated during			
			learning as an			
			assignment grade			
			assignment grade			
		For	m of Assessment :			
		Par	ticipatory Activities,			
		Tes				

	1					
9	Mastering problem	 Describe the 	Criteria:	Exploratory		5%
	solving skills to	arrangement of	1.Assessment is	practicum with		
	carry out studies of plant root anatomy	tissues that	based on	problem		
	related to their	make up	benchmarks	solving		
	function and role.	primary and	(PAP). The	strategies		
	Having a		assessment	regarding the		
	responsible,	secondary		anatomy of		
	independent and	roots	components	plant roots		
	honest attitude	2.Identify the	consist of sub-	related to their		
	towards	primary and	summative,	function.		
	performance in	secondary	assignment,	Presentation		
	lectures on the	constituent	summative and	discussion on		
	structure of plant development	tissues of	participation	the		
	development	monocot and	scores.	anatomical		
		dicot roots.	2.Participation	properties of		
		3.Explain the	assessment is an	roots related		
		•		to their		
		relationship	assessment of			
		between the	attitudes.	function 6 X 50		
		structure of	3.Performance	0 \ 30		
		root tissue and	assessment in the			
		its role.	form of			
		4.Explain the	presentation			
		process of	performance is			
		secondary	carried out			
		growth of	integrated during			
		•	9			
		roots.	learning as an			
		5.Designing	assignment grade			
		solutions to	F			
		problems	Form of Assessment :			
		related to the	Project Results			
		anatomical	Assessment / Product			
		structure of	Assessment			
		roots as a form				
		of adaptation				
		to the				
		environment.				
		6.Prepare				
		problem				
		solving reports				
		related to the				
		anatomical				
		structure of				
		roots as a form				
		of adaptation				
		to the				
		environment.				
		7.Be present on				
		time according				
		to the lecture				
		schedule				
		8.Collect				
		assignments				
		on time				
		9.Actively				
		express				
		opinions during				
		discussions				
		and				
	1	presentations		1	Ī	

10	Understand the concept of morphological characteristics of plant leaves while mastering problem solving skills to conduct studies on the morphological characteristics of plant leaves related to their function and external environment. Have a responsible, independent and honest attitude towards performance in lectures on the structure of plant development	1. Explain the process of leaf formation. 2. Describe the morphological characteristics of leaves 3. Presents the explored leaf phyllotaxis 4. Describe leaf modifications 5. Explain the logical relationship between modified leaf structure and its role and habitat conditions. 6. Be present on time according to the lecture schedule 7. Collect assignments on time 8. Actively express opinions during discussions and presentations	Criteria: 1.Assessment is based on benchmarks (PAP). The assessment components consist of subsummative, assignment, summative and participation scores. 2.Participation assessment of attitudes. 3.Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Project Results Assessment / Product Assessment	Practical exploration of leaf morphology related to its function. Presentation discussion on the morphological characteristics of leaves related to their function 6 X 50		5%
11	Understand the concept of morphological characteristics of plant leaves while mastering problem solving skills to conduct studies on the morphological characteristics of plant leaves related to their function and external environment. Have a responsible, independent and honest attitude towards performance in lectures on the structure of plant development	1.Explain the process of leaf formation. 2.Describe the morphological characteristics of leaves 3.Presents the explored leaf phyllotaxis 4.Describe leaf modifications 5.Explain the logical relationship between modified leaf structure and its role and habitat conditions. 6.Be present on time according to the lecture schedule 7.Collect assignments on time 8.Actively express opinions during discussions and presentations	Criteria: 1. Assessment is based on benchmarks (PAP). The assessment components consist of subsummative, assignment, summative and participation scores. 2. Participation assessment is an assessment of attitudes. 3. Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Project Results Assessment / Product Assessment	Practical exploration of leaf morphology related to its function. Presentation discussion on the morphological characteristics of leaves related to their function 6 X 50		5%

12	Mastering problem solving skills to study the anatomy of plant leaves related to their function and role. Having a responsible, independent and honest attitude towards performance in lectures on the structure of plant development	1.Describe the arrangement of leaf tissues. 2.Explain the relationship between leaf tissue structure and its role and habitat. 3.Designing solutions to problems related to the anatomical structure of roots as a form of adaptation to the environment. 4.Prepare problem solving reports related to the anatomical structure of roots as a form of adaptation to the environment 5.Be present on time according to the lecture schedule 6.Collect assignments on time 7.Actively express opinions during	Criteria: 1. Assessment is based on benchmarks (PAP). The assessment components consist of subsummative, assignment, summative and participation scores. 2. Participation assessment is an assessment of attitudes. 3. Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Project Results Assessment / Product Assessment	Exploratory practicum with problem solving strategies regarding the anatomy of plant leaves related to their function and habitat. Presentation discussion on the anatomical properties of leaves related to their function and habitat 6 X 50		5%
		discussions and presentations				
13	Mastering problem solving skills to study the anatomy of plant leaves related to their function and role. Having a responsible, independent and honest attitude towards performance in lectures on the structure of plant development	1.Describe the arrangement of leaf tissues. 2.Explain the relationship between leaf tissue structure and its role and habitat. 3.Designing solutions to problems related to the anatomical structure of roots as a form of adaptation to the environment. 4.Prepare problem solving reports related to the anatomical structure of roots as a form of adaptation to the environment. 5.Be present on time according to the lecture schedule 6.Collect assignments on time 7.Actively express opinions during discussions and presentations	Criteria: 1.Assessment is based on benchmarks (PAP). The assessment components consist of subsummative, assignment, summative and participation scores. 2.Participation assessment is an assessment of attitudes. 3.Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Participatory Activities, Project Results Assessment / Product Assessment	Exploratory practicum with problem solving strategies regarding the anatomy of plant leaves related to their function and habitat. Presentation discussion on the anatomical properties of leaves related to their function and habitat 6 X 50		10%

14	Understand the concept of flower morphological characters. Have a responsible, independent and honest attitude towards performance in lectures on the structure of plant development	1.Explain the development of flowers. 2.Describe the parts that make up a flower. 3.Identify the parts that make up a flower. 4.Describe flower diagrams and formulas. 5.Identify different types of inflorescences. 6.Compare various types of flowers based on their pollination 7.Be present on time according to the lecture schedule 8.Collect assignments on time 9.Actively express opinions during discussions and presentations	Criteria: 1.Assessment is based on benchmarks (PAP). The assessment components consist of subsummative, assignment, summative and participation scores. 2.Participation assessment is an assessment of attitudes. 3.Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Participatory Activities, Practical Assessment	Practical exploration of flower morphology related to its function. Presentation discussion on the morphological characteristics of flowers related to their function 6 X 50		10%
15	Understand the concept of morphological characteristics of plant fruit and seeds while mastering problem solving skills to conduct studies on the morphological characteristics of fruit and seeds related to their function and external environment. Have a responsible, independent and honest attitude towards performance in lectures on the structure of plant development	1.Explain the development of fruit and seeds. 2.Describe the constituent parts of fruit and seeds. 3.Identify the constituent parts of fruit and seeds. 4.Identify various types of fruit and seeds related to their function, habitat and distribution process. 5.Be present on time according to the lecture schedule 6.Collect assignments on time 7.Actively express opinions during discussions and presentations	Criteria: 1.Assessment is based on benchmarks (PAP). The assessment components consist of subsummative, assignment, summative and participation scores. 2.Participation assessment is an assessment of attitudes. 3.Performance assessment in the form of presentation performance is carried out integrated during learning as an assignment grade Form of Assessment: Participatory Activities	Practical exploration of the morphology of fruit and seeds related to their function. Presentation discussion on the morphological characteristics of fruit and seeds related to their function, habitat and distribution process 6 X 50		10%
16			Form of Assessment : Participatory Activities			10%

Evaluation Percentage Recap: Project Based Learning

Evaluation i crochtage recoup. I roject Basea Ecarning				
No	Evaluation	Percentage		
1.	Participatory Activities	35%		
2.	Project Results Assessment / Product Assessment	55%		
3.	Practical Assessment	5%		
4.	Test	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.
- 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** 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.
- 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.