

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

## Universitas Negeri Surabaya Faculty of Engineering , Information Technology Education Undergraduate Study Program

Document Code

## SEMESTER LEARNING PLAN

				OL	_!V!!	LO			./ \   \ \	41140	, , ,		•				
Courses				CODE				Cours	se Fam	ly	Cred	dit Wei	ght		SEME	STER	Compilation Date
Digital In	nage	Processing		83207023	136					Program T=3 P=0 ECTS		ECTS=	4.77	5 July 17,		July 17, 2024	
AUTHOR	IZAT	TON		SP Deve	loper			Licoti	ve cou		e Clu	ster Co	oordina	tor	Study	Program	Coordinator
															Drs. B	ambang S	ujatmiko, M.T.
Learning model	l	Project Based I	_earnir	ng													
Program Learning		PLO study pro	gram	which is	char	ged t	o the c	ours	е								
Outcom (PLO)		PLO-8 Mastering the concepts and implementation in developing software engineering, games, intelligent multimedia, and network computer engineering.															
,		PLO-13 Able to develop innovative educational products or learning resources using scientific design-based strategies to support teaching activities that can be integrated with ICT.															
		Program Objectives (PO)															
		PLO-PO Matrix	K														
											-						
				P.O	P.O PLO-8 PLO-13												
									-								
		PO Matrix at th	ne end	l of each	learn	ning s	tage (S	Sub-P	PO)								
			Гр	0	O Week												
				.0	2	3	4	5	6 7	8	9	10	11	12	13	14	15 16
				-			-		-   -								
Short Course Descript	tion	Explanation of the Process, Image Evaluation stage	Resto	oration, E	nhand	cemer	nt Proce	ess, S	Segmer	tation F	roces	s, Fea	iture E	xtracti	on, Re	cognition	Process, and
Referen	ces	Main :															
	<ol> <li>Parker, J.R., 1997. Algorithms for Image Processing and Computer Vision, John Wiley &amp; Sons, Inc.</li> <li>Gonzales, R.C., and Woods, R. E. 2002. Digital Image Processing. Prentice Hall.</li> <li>Pratt, W.K 2007. Digital Image Processing, John Wiley &amp; Sons, Inc.</li> <li>Russ, John C. 2007. The Image Processing Handbook, fifth edition. CRC Press.</li> </ol>																
		Supporters:															
Supporting lecturer Setya Chendra Wibawa, S.Pd., M.T. Martini Dwi Endah Susanti, S.Kom., M.Kom. Ramadhan Cakra Wibawa, S.Pd., M.Kom.																	
Week-		al abilities of h learning ge		E	Evalua	ation				Lea Stude	ning i	earning metho signme ted tim	ds, ents,		ma	arning terials	ials Assessment (%)
		Ď-PO)	Ir	ndicator		Crite	eria & F	orm		line ( line )	C	Online	( online	•)	[ References ]		

1	Explain the concept of digital image processing	1.Explain the meaning of digital image processing 2.Explain the steps in digital image processing 3.Explain the components of an image processing system	Form of Assessment : Participatory Activities	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practical 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, 3 X 50 online practicum	Material: Explaining the Basic Concepts of Digital Images References: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	2%
2	Implementing the basics of digital imagery in everyday life	1.Explain the basics of digital imaging     2.Applying the basics of digital images in programming using Matlab	Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practicum 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, online Practicum 3 X 50	Material: Explaining the basics of images and their application in Matlab Reference: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	2%
3	Implementing the basics of digital imagery in everyday life	1.Explain the basics of digital imaging     2.Applying the basics of digital images in programming using Matlab	Forms of Assessment: Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practicum 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, online Practicum 3 X 50	Material: Explaining the basics of images and their application in Matlab Reference: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	3%
4	Implementing Image Enhancement in the Spatial Domain in everyday life	1.Explaining Image Enhancement in the Spatial Domain 2.Applying Image Enhancement in the Spatial Domain in programming using Matlab	Criteria: - Form of Assessment: Participatory Activities, Practical Assessment	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practicum 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, online Practicum 3 X 50	Material: Explaining Image Enhancement in the Spatial Domain and Application in Matblab Library: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	3%
5	Implementing Image Enhancement in the Spatial Domain in everyday life	1.Explaining Image Enhancement in the Spatial Domain 2.Applying Image Enhancement in the Spatial Domain in programming using Matlab	Criteria: - Forms of Assessment: Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practicum 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, online Practicum 3 X 50	Material: Explaining Image Enhancement in the Spatial Domain and Application in Matblab Library: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	3%

6	Implementing Image Enhancement in the Frequency Domain in everyday life	1.Explaining Image Enhancement in the Frequency 2.Applying Image Enhancement in the Frequency 3.Domain in programming using Matlab	Criteria: - Form of Assessment: Participatory Activities, Practical Assessment	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practicum 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, online Practicum 3 X 50	Material: Explaining Image Enhancement and Application in Matlab Reference: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	3%
7	Implementing Image Enhancement in the Frequency Domain in everyday life	1.Explaining Image Enhancement in the Frequency 2.Applying Image Enhancement in the Frequency 3.Domain in programming using Matlab	Criteria: - Form of Assessment : Participatory Activities	Approach: Scientific Model: Problem- based learning Method: Discussion, Presentation, Practicum 3 X 50	Approach: Scientific Model: Problem-based learning Method: Discussion, Presentation, online Practicum 3 X 50	Material: Explaining Image Enhancement and Application in Matlab Reference: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	3%
8	UTS	UTS	Criteria: - Form of Assessment: Project Results Assessment / Product Assessment, Test	UTS 2 X 50	UTS 2 X 50	Material: Everything that has been taught from meetings 1-7 References: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	25%

Im	mplementing mage Restoration n real life	1.Explaining Image Restoration 2.Applying Image	Criteria: - Forms of	1. Students observe the problem	1. Students observe the problem given by the lecturer, referring to	<b>Material:</b> Explaining Image	3%
		Restoration 2.Applying	- Forms of	problem	the lecturer, referring to		
	rreal inc	2.Applying	Forms of			Image	
			⊢orms ot			_ 7 .	
			A	given by the	the topic that has been	Restoration and	
			Assessment :	lecturer,	agreed upon during the	Application in	
		Restoration	Participatory	referring to	lesson. In groups,	Matlab	
		3.Applying	Activities, Portfolio	the topic that	students discuss to	Reference:	
		image	Assessment,	has been	formulate hypotheses	Sulistiyanti, SR,	
		restoration in	Practical	agreed upon	related to the problems	Setyawan, A.,	
		programming	Assessment	during the	they face.	and	
		using Matlab		lesson. In	2. Students begin to	Komarudin, M.	
		using Maliab		groups,	prepare the project that	2016. Basic	
				students	will be worked on to	Image	
				discuss to	answer the hypothesis	Processing and	
				formulate hypotheses	that has been prepared 3. Students prepare a	Examples of Its Application.	
				related to the	schedule for	Technoscience.	
				problems	completing the project	recilioscience.	
				they face.	that will be worked on		
]				2. Students	4. Students carry out		
				begin to	the stages of the		
				prepare the	project according to the		
				project that	schedule that they		
				will be	have prepared (the		
]				worked on to	lecturer observes each		
				answer the	stage of the student		
				hypothesis	project that is being		
				that has	worked on)		
				been	5 . Students make		
				prepared	reports related to		
				3. Students	projects that have been		
				prepare a	carried out within the		
				schedule for	specified time period.		
				completing	6. Students reveal the		
				the project	experiences that have		
				that will be	been carried out by		
				worked on	displaying the		
				<ol><li>Students</li></ol>	outcomes of projects		
				carry out the	that have been		
				stages of the	completed.		
				project	3 X 50		
				according to			
				the schedule			
				that they			
				have			
				prepared			
				(the lecturer			
				observes			
				each stage of			
]				the student project that is			
				being worked on)			
				5 . Students			
				make reports			
				related to			
]				projects that			
				have been			
] [				carried out			
				within the			
				specified			
] [				time period.			
				6. Students			
				reveal the			
				experiences			
				that have			
				been carried			
				out by			
				displaying			
				the			
]				outcomes of			
				projects that			
				have been			
				completed.			
				3 X 50			

10	Implementing Image Restoration	1.Explaining	Criteria:	1. Students observe the	Students observe     the problem given by	Material: Explaining	3%
	in real life	Image	-		the lecturer, referring to		
		Restoration	Forms of	problem		Image	
		2.Applying		given by the	the topic that has been	Restoration and	
		Image	Assessment :	lecturer,	agreed upon during the	its Application	
		Restoration	Participatory	referring to	lesson. In groups,	in Matlab	
		3.Applying	Activities, Project	the topic that	students discuss to	Reference:	
			Results	has been	formulate hypotheses	Sulistiyanti, SR,	
		image	Assessment /	agreed upon	related to the problems	Setyawan, A.,	
		restoration in	Product	during the	they face.	and	
		programming	Assessment,	lesson. In	2. Students begin to	Komarudin, M.	
		using Matlab	Practical	groups,	prepare the project that	2016. Basic	
			Assessment	students	will be worked on to	Image	
				discuss to	answer the hypothesis	Processing and	
				formulate	that has been prepared	Examples of Its	
				hypotheses	3. Students prepare a	Application.	
				related to the	schedule for	Technoscience.	
				problems	completing the project		
				they face.	that will be worked on		
				2. Students	4. Students carry out		
				begin to	the stages of the		
				prepare the	project according to the		
				project that	schedule that they		
				will be	have prepared (the		
				worked on to	lecturer observes each		
				answer the	stage of the student		
				hypothesis	project that is being		
				that has	worked on)		
				been	5 . Students make		
				prepared	reports related to		
				3. Students	projects that have been		
				prepare a	carried out within the		
				schedule for	specified time period.		
				completing	6. Students reveal the		
				the project	experiences that have		
				that will be	been carried out by		
				worked on	displaying the		
				4. Students	outcomes of projects		
				carry out the	that have been		
				stages of the	completed.		
				project			
				according to			
				the schedule			
				that they			
				have			
				prepared			
				(the lecturer			
				observes			
				each stage of			
				the student			
				project that is			
				being worked			
				on)			
				5 . Students			
				make reports			
				related to			
				projects that			
				have been			
				carried out			
				within the			
				specified			
				time period.			
				6. Students			
				reveal the			
				experiences			
				that have			
				been carried			
				out by			
				displaying			
				the			
				outcomes of			
				projects that			
				have been			
	1			completed.			
						i l	
	1			3 X 50		1	

11	Implementing	1.Explaining	Criteria:	1. Students	Students observe	Material:	3%
	Image Restoration in real life	Image	-	observe the	the problem given by	Explaining	
	in rear ille	Restoration		problem	the lecturer, referring to	Image	
		2.Applying	Forms of	given by the	the topic that has been	Restoration and	
			Assessment:	lecturer,	agreed upon during the	Application in	
		Image	Participatory	referring to	lesson. In groups,	Matlab	
		Restoration	Activities, Project	the topic that	students discuss to	Reference:	
		3.Applying	Results	has been	formulate hypotheses	Sulistiyanti, SR,	
		image	Assessment /		related to the problems		
		restoration in	Product	agreed upon		Setyawan, A.,	
		programming	Assessment,	during the	they face.	and	
		using Matlab	Portfolio	lesson. In	Students begin to	Komarudin, M.	
		using Maliab		groups,	prepare the project that	2016. Basic	
			Assessment,	students	will be worked on to	Image	
			Practical	discuss to	answer the hypothesis	Processing and	
			Assessment,	formulate	that has been prepared	Examples of Its	
			Practice /	hypotheses	<ol><li>Students prepare a</li></ol>	Application.	
			Performance	related to the	schedule for	Technoscience.	
				problems	completing the project		
				they face.	that will be worked on		
				2. Students	Students carry out		
				begin to	the stages of the		
					project according to the	[	
				prepare the		[	
				project that	schedule that they		
				will be	have prepared (the		
				worked on to	lecturer observes each		
				answer the	stage of the student	1	
				hypothesis	project that is being	]	
				that has	worked on)		
				been	5 . Students make	]	
				prepared	reports related to	]	
				3. Students	projects that have been		
				prepare a	carried out within the	]	
				schedule for	specified time period.		
				completing	6. Students reveal the	]	
				the project	experiences that have	]	
				that will be	been carried out by	]	
				worked on	displaying the	]	
				4. Students	outcomes of projects		
				carry out the	that have been		
				stages of the	completed.		
				project	3 X 50		
				according to			
				the schedule			
				that they			
				have			
				prepared			
				(the lecturer			
				observes			
				each stage of			
				the student			
				project that is			
				being worked		1	
				on)			
				5 Students			
				make reports		]	
				related to			
				projects that			
				have been			
				carried out		1	
				within the			
				specified			
				time period.			
				6. Students		1	
				reveal the		1	
				experiences			
				that have			
				been carried		1	
				out by		1	
				displaying			
				the			
				outcomes of			
				projects that		]	
				have been			
				completed.			
			1	i combieteu.	İ	1	
				3 X 50			

12	Implementing	1.Explaining	Criteria:	1. Students	1. Students observe	Material:	3%
·	image 0	Image	-	observe the	the problem given by	Explaining	2,0
	segmentation in	Segmentation		problem	the lecturer, referring to	Image	
	real life	5	Forms of	given by the	the topic that has been	Segmentation	
		2.Applying	Assessment:	lecturer,	agreed upon during the	and Application	
		Image	Participatory	referring to	lesson. In groups,	in Matlab	
		Segmentation	Activities, Project	the topic that	students discuss to	Reference:	
		to real life in	Results	has been	formulate hypotheses	Sulistiyanti, SR,	
		Matlab	Assessment /				
			Product	agreed upon	related to the problems	Setyawan, A.,	
				during the	they face.	and	
			Assessment,	lesson. In	Students begin to	Komarudin, M.	
			Portfolio	groups,	prepare the project that	2016. Basic	
			Assessment	students	will be worked on to	Image	
				discuss to	answer the hypothesis	Processing and	
				formulate	that has been prepared	Examples of Its	
				hypotheses	<ol><li>Students prepare a</li></ol>	Application.	
				related to the	schedule for	Technoscience.	
				problems	completing the project		
				they face.	that will be worked on		
				2. Students	4. Students carry out		
				begin to	the stages of the		
				prepare the	project according to the		
				project that	schedule that they		
				will be	have prepared (the		
				worked on to	lecturer observes each		
				answer the	stage of the student		
				hypothesis	project that is being		
				that has	. ,		
					worked on) 5 . Students make		
				been			
				prepared	reports related to		
				3. Students	projects that have been		
				prepare a	carried out within the		
				schedule for	specified time period.		
				completing	Students reveal the		
				the project	experiences that have		
				that will be	been carried out by		
				worked on	displaying the		
				4. Students	outcomes of projects		
				carry out the	that have been		
				stages of the	completed.		
				project			
				according to			
				the schedule			
				that they			
				have			
				prepared			
				(the lecturer			
				,			
				observes			
				each stage of			
				the student			
				project that is			
				being worked			
				on)			
				5 Students			
				make reports			
				related to			
				projects that			
				have been			
				carried out			
				within the			
				specified		]	
				time period.		]	
				6. Students			
				reveal the			
				experiences		]	
				that have		]	
				been carried		]	
						]	
				out by			
				displaying			
				the			
				outcomes of			
				projects that			
				have been			
				completed.			
				3 X 50			

13	Implementing	1.Explaining	Criteria:	1. Students	Students observe	Material:	3%
	image segmentation in	Image	-	observe the	the problem given by	Explaining	
	real life	Segmentation	_	problem	the lecturer, referring to	Image	
	I GAI III G	2.Applying	Forms of	given by the	the topic that has been	Segmentation	
		Image	Assessment :	lecturer,	agreed upon during the	and Application	
	]	•	Participatory	referring to	lesson. In groups,	in Matlab	
		Cementation	Activities, Project	the topic that	students discuss to	Reference:	
		to real life in	Results	has been	formulate hypotheses	Sulistiyanti, SR,	
		Matlab	Assessment /	agreed upon	related to the problems	Setyawan, A.,	
			Product	during the	they face.	and	
			Assessment,	lesson. In	2. Students begin to	Komarudin, M.	
			Portfolio	groups,	prepare the project that	2016. Basic	
			Assessment,	students	will be worked on to	Image	
			Practical	discuss to	answer the hypothesis	Processing and	
			Assessment,	formulate	that has been prepared	Examples of Its	
			Practice /	hypotheses	3. Students prepare a	Application.	
			Performance	related to the	schedule for	Technoscience.	
				problems	completing the project	recimoscience.	
				they face.	that will be worked on		
				2. Students	4. Students carry out		
	]			begin to	the stages of the		
	]			prepare the	project according to the		
				project that	schedule that they		
	]			will be	have prepared (the		
				worked on to	lecturer observes each		
				answer the	stage of the student		
				hypothesis	project that is being		
				that has	worked on)		
				been	5 . Students make		
				prepared	reports related to		
				3. Students	projects that have been		
				prepare a	carried out within the		
				schedule for	specified time period.		
				completing	6. Students reveal the		
				the project	experiences that have		
				that will be	been carried out by		
				worked on	displaying the		
				4. Students	outcomes of projects		
				carry out the	that have been		
				stages of the	completed.		
				project	3 X 50		
				according to			
				the schedule			
				that they			
				have			
				prepared			
				(the lecturer			
				observes			
				each stage of			
				the student			
	]			project that is			
				being worked			
				on)			
				5 . Students			
				make reports			
				related to			
				projects that			
				have been			
				carried out			
				within the			
				specified			
				time period.			
				6. Students			
				reveal the			
				experiences			
				that have			
				been carried			
				out by			
				displaying			
				the			
				outcomes of			
				projects that			
				have been			
				completed.			
	1			2 V E0			
				3 X 50			

14	Implementing	1.Explain the	Criteria:	1. Students	1. Students observe	Material:	3%
	object recognition	concept of	-	observe the	the problem given by	Explaining	
				problem	the lecturer, referring to	Object	
		object	Form of	given by the	the topic that has been	Recognition	
		recognition					
		2.Applying	Assessment :	lecturer,	agreed upon during the	and its	
		object	Participatory	referring to	lesson. In groups,	Application in	
		•	Activities, Project	the topic that	students discuss to	Matlab	
		recognition in	Results	has been	formulate hypotheses	Reference:	
		Matlab	Assessment /	agreed upon	related to the problems	Sulistiyanti, SR,	
		programming	Product	during the		Setyawan, A.,	
		1 3 3	Assessment		they face.		
			Assessment	lesson. In	Students begin to	and	
				groups,	prepare the project that	Komarudin, M.	
				students	will be worked on to	2016. Basic	
				discuss to	answer the hypothesis	Image	
				formulate	that has been prepared	Processing and	
				hypotheses	3. Students prepare a	Examples of Its	
				related to the	schedule for	Application.	
					completing the project	Technoscience.	
				problems		recrinoscience.	
				they face.	that will be worked on		
				2. Students	<ol><li>Students carry out</li></ol>		
				begin to	the stages of the		
				prepare the	project according to the	]	
				project that	schedule that they		
				will be	have prepared (the		
				worked on to	lecturer observes each		
				answer the	stage of the student		
				hypothesis	project that is being		
				that has	worked on)		
				been	5 . Students make		
				prepared	reports related to		
				3. Students	projects that have been		
				prepare a	carried out within the		
				schedule for	specified time period.		
				completing	6. Students reveal the		
				the project	experiences that have		
				that will be	been carried out by		
				worked on	displaying the		
				4. Students	outcomes of projects		
				carry out the	that have been		
				stages of the	completed.		
				project			
				according to			
				the schedule			
				that they			
				have .			
				prepared			
				(the lecturer			
				observes			
				each stage of			
				the student			
				project that is			
				being worked			
				on)			
				5 . Students			
				make reports			
				related to			
				projects that			
				have been			
				carried out			
				within the			
				specified			
				time period.		]	
				6. Students			
				reveal the			
				experiences			
				that have			
				been carried			
				out by			
				displaying			
				the			
				outcomes of			
				projects that			
				have been			
				completed.			
						1	
				3 X 50			

15	Implementing object recognition	1.Explain the concept of object recognition 2.Applying object recognition in Matlab programming	Criteria:  - Forms of Assessment: Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment, Practical / Performance	1. Students observe the problem given by the lecturer, referring to the topic that has been agreed upon during the lesson. In groups, students discuss to formulate hypotheses related to the problems they face. 2. Students begin to prepare the project that will be worked on to answer the hypothesis that has been prepared 3. Students prepare a schedule for completing the project that will be worked on 4. Students prepared 3. Students prepared 3. Students prepared that will be worked on 4. Students prepared (the lecturer observes each stage of the student that they have prepared (the lecturer observes each stage of the student project that is being worked on) 5. Students make reports related to projects that have been carried out within the specified time period. 6. Students reveal the experiences that have been carried out by displaying the outcomes of projects that have been carried out by final Exam or projects that have been carried out by displaying the force outcomes of projects that have been carried out by displaying the final Exam or prepared completed.	1. Students observe the problem given by the lecturer, referring to the topic that has been agreed upon during the lesson. In groups, students discuss to formulate hypotheses related to the problems they face.  2. Students begin to prepare the project that will be worked on to answer the hypothesis that has been prepared  3. Students prepare a schedule for completing the project that will be worked on 4. Students carry out the stages of the project according to the schedule that they have prepared (the lecturer observes each stage of the student project that is being worked on)  5. Students make reports related to projects that have been carried out within the specified time period.  6. Students reveal the experiences that have been carried out by displaying the outcomes of projects that have been completed.  3 X 50	Material: Explaining Object Recognition and its Application in Matlab Reference: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	35%
			Final exams  Forms of Assessment: Project Results Assessment / Product Assessment, Portfolio Assessment, Practical Assessment, Practice / Performance, Tests	Semester 2 X 50	3 X 50 Semester Final Exam	Everything that has been taught from the 9-15 meeting References: Sulistiyanti, SR, Setyawan, A., and Komarudin, M. 2016. Basic Image Processing and Examples of Its Application. Technoscience.	55%

Evaluation Percentage Recap: Project Based Learning

Lva	idation i ciccitage Necap. I roject based Ecan	iiiig
No	Evaluation	Percentage
1.	Participatory Activities	17.12%
2.	Project Results Assessment / Product Assessment	27.62%
3.	Portfolio Assessment	10.2%
4.	Practical Assessment	16.62%
5.	Practice / Performance	8.95%
6.	Test	19.5%
	_	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.
- 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.
- 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.