	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Undergraduate Chemistry Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
BIOCHEMISTRY PRACTICUM	4720102216	Compulsory Study Program Subjects	T=0	P=2	ECTS=3.18	4	July 21, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	Program Objectives (PO)	
	PO - 1	Skilled in carrying out quantitative analysis of levels of glucose, amino acids, fats, vitamins in a sample and testing factors that influence enzymes in their role in metabolic processes.
	PO - 2	Mastering the basic concepts of qualitative and quantitative analysis to determine levels of compounds that play a role in metabolic processes based on the data obtained
	PO - 3	Mastering the basic concepts of the instruments used and their application in data analysis
	PO - 4	Make decisions based on the results obtained during the testing process to data calculations
	PLO-PO Matrix	

P.O
PO-1
PO-2
PO-3
PO-4

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																
PO-4																

Short Course Description	Providing skills regarding qualitative and quantitative analysis methods for levels of glucose, amino acids, fats, vitamins in a sample as well as testing factors that influence enzymes in their role in metabolic processes. The study was carried out through discussions, questions and answers and practicums	
References	**Main :**	

1. Lehninger, 1988,Dasar-dasar Biokimia, jilid 1, Jakarta, Erlangga
2. Nelson D.L., and Cox M.M., 2003,Lehninger Principle of Biochemistry, 4th edition, University of Winconsin-Madison
3. Boyer R, 2000. Modern Experimental Biochemistry. San Francisco: Addison Wesley Longman
4. Penuntun Praktikum Biokimia, 2010, Tim Pengajar Biokimia, Penerbit Unipress Unesa

Supporters:	
Supporting lecturer	Prof. Dr. Hj. Rudiana Agustini, M.Pd. Dr. Prima Retno Wikandari, M.Si. Prof. Dr. Nuniek Herdyastuti, M.Si. Mirwa Adiprahara Anggarani, S.Si., M.Si. Muhammad Nurrohman Sidiq, S.Si., M.Sc., Ph.D. dr. Shod Abdurrachman Dzulkarnain, M.Biomed

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Understand the basic principles of equipment used in practicum activities, basic skills for working in a Biochemistry laboratory, techniques for implementing Biochemistry practicum and Biochemistry practicum rules	1. Explain the basics of Biochemistry practicum 2. Explain the basic principles of qualitative and quantitative testing in Biochemistry practicum 3. Explain methods of data analysis and calculations	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Project Results Assessment / Product Assessment	Presentation, discussion and demonstration 3 X 50		**Material:** 1. Introduction to Biochemistry practicum 2. Basic principles of qualitative and quantitative testing in Biochemistry practicum 3. Basic calculations and data analysis **References:** *Lehninger, 1988, Basics of Biochemistry, volume 1, Jakarta, Erlangga*	10%

2	Understand the basic principles of practical activities for determining blood glucose levels	1. Explain the basic principles of paper chromatography. 2. Explain data analysis with paper chromatography; and 3. Explain the basic principles of isolating glucose in blood 4. Explain the method for analyzing blood glucose levels 5. Explain data analysis using a UV-Vis Spectrophotometer	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Project Results Assessment / Product Assessment	Presentation, discussion and demonstration 3 X 50		**Material:** Basic principles of practical activities for determining blood glucose levels. **References:** *Nelson DL, and Cox MM, 2003, Lehninger Principle of Biochemistry, 4th edition, University of Wisconsin-Madison*	5%

3	Understand the basic principles of practical activities that pH and enzyme concentration influence enzyme activity and Understand the basic principles of practical activities in determining protein using the Biuret method	1. Explain the basic principles of factors that influence enzyme activity. 2. Explain the analytical method for determining amylase enzyme activity in saliva. 3. Explain data analysis using a UV-Vis Spectrophotometer; and 4. Explain the basic principles of the Biuret method for determining protein levels. 5. Explain the analysis of protein level data using a UV-Vis Spectrophotometer	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Forms of Assessment** : Project Results Assessment / Product Assessment, Practical Assessment	Presentation, discussion and demonstration 3 X 50		**Material:** basic principles of practical activities that pH and enzyme concentration influence enzyme activity and Understanding the basic principles of practical activities in determining protein using the Biuret method. **Library:** *Nelson DL, and Cox MM, 2003, Lehninger Principle of Biochemistry, 4th edition, University of Wisconsin-Madison*	5%

4	1. Able to determine the amino acids contained in the sample using paper chromatography; 2. Able to determine blood glucose levels using a UV-Vis spectrophotometer; 3. Able to prove that pH and enzyme concentration influence enzyme activity 4. Able to determine protein levels in samples using the Biuret method	1. Skilled in carrying out paper chromatography using amino acid samples and analyzing the results; 2. Skilled in isolating glucose in the blood; Can analyze blood glucose levels using a UV-Vis spectrophotometer; 3. Skilled in analyzing amylase enzyme activity, Skilled in using a UV-Vis spectrophotometer to determine amylase enzyme activity, Can analyze the data obtained; 4. Skilled in analyzing protein levels using the Biuret method; Skilled in using a UV-Vis spectrophotometer to determine protein levels; Can analyze the data obtained	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Forms of Assessment** : Project Results Assessment / Product Assessment, Practical Assessment	Practical 3 X 50			6%

5	1. Able to determine the amino acids contained in the sample using paper chromatography; 2. Able to determine blood glucose levels using a UV-Vis spectrophotometer; 3. Able to prove that pH and enzyme concentration influence enzyme activity 4. Able to determine protein levels in samples using the Biuret method	1. Skilled in carrying out paper chromatography using amino acid samples and analyzing the results; 2. Skilled in isolating glucose in the blood; Can analyze blood glucose levels using a UV-Vis spectrophotometer; 3. Skilled in analyzing amylase enzyme activity, Skilled in using a UV-Vis spectrophotometer to determine amylase enzyme activity, Can analyze the data obtained; 4. Skilled in analyzing protein levels using the Biuret method; Skilled in using a UV-Vis spectrophotometer to determine protein levels; Can analyze the data obtained	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Project Results Assessment / Product Assessment	Practical 3 X 50			7%

6	1. Able to determine the amino acids contained in the sample using paper chromatography; 2. Able to determine blood glucose levels using a UV-Vis spectrophotometer; 3. Able to prove that pH and enzyme concentration influence enzyme activity 4. Able to determine protein levels in samples using the Biuret method	1. Skilled in carrying out paper chromatography using amino acid samples and analyzing the results; 2. Skilled in isolating glucose in the blood; Can analyze blood glucose levels using a UV-Vis spectrophotometer; 3. Skilled in analyzing amylase enzyme activity, Skilled in using a UV-Vis spectrophotometer to determine amylase enzyme activity, Can analyze the data obtained; 4. Skilled in analyzing protein levels using the Biuret method; Skilled in using a UV-Vis spectrophotometer to determine protein levels; Can analyze the data obtained	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Forms of Assessment** : Project Results Assessment / Product Assessment, Practical Assessment	Practical 3 X 50			7%

7	1. Able to determine the amino acids contained in the sample using paper chromatography; 2. Able to determine blood glucose levels using a UV-Vis spectrophotometer; 3. Able to prove that pH and enzyme concentration influence enzyme activity 4. Able to determine protein levels in samples using the Biuret method	1. Skilled in carrying out paper chromatography using amino acid samples and analyzing the results; 2. Skilled in isolating glucose in the blood; Can analyze blood glucose levels using a UV-Vis spectrophotometer; 3. Skilled in analyzing amylase enzyme activity, Skilled in using a UV-Vis spectrophotometer to determine amylase enzyme activity, Can analyze the data obtained; 4. Skilled in analyzing protein levels using the Biuret method; Skilled in using a UV-Vis spectrophotometer to determine protein levels; Can analyze the data obtained	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Forms of Assessment** : Project Results Assessment / Product Assessment, Practical Assessment	Practical 3 X 50			7%

8	UTS	Understand the basics of biochemistry practicum	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Forms of Assessment** : Project Results Assessment / Product Assessment, Practical Assessment, Tests	Presentation, discussion and demonstration 3 X 50			10%

9	Understand the basic principles of practical activities in quantitative lipid testing; and Understand the basic principles of practical activities in vitamin C analysis	1. Explain the reactions accompanying quantitative tests on fatty acids. 2. Explain the determination of peroxide and free fatty acid numbers. 3. Explain the calculation of peroxide and free fatty acid numbers; and 4. Explain the determination of vitamin C levels in fresh fruit. 5. Explain the method for analyzing vitamin C levels	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Presentation, discussion and demonstration 3 X 50			5%

10	Understand the basic principles of practical activities on DNA isolation and characterization from samples; and Understand and independently design one of the biochemistry practicum courses that has been presented previously using different methods.	1. Explain the basic principles of DNA isolation. 2. Explain the characterization of DNA using electrophoresis. 3. Explain the analysis of data from DNA isolation results; And 4. Designing a practical method for determining amino acid levels in samples 5. Designing a practical method for determining blood glucose levels 6. Designing a practical method for determining the effect of pH and enzyme concentration on enzyme activity 7. Designing a method for determining protein levels using the Biuret method 8. Designing a method quantitative lipid test practicum 9. Designing a practicum method for vitamin C analysis 10. Designing a practicum method for isolating and characterizing DNA from samples	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Presentation, discussion and demonstration 3 X 50		**Material:** basic principles of practical activities on DNA isolation and characterization from samples; and Understand and independently design one of the biochemistry practicum courses that has been presented previously using different methods. **References:** *Boyer R, 2000. Modern Experimental Biochemistry. San Francisco: Addison Wesley Longman*	5%

11	Able to determine peroxide and free fatty acid numbers in quantitative lipid tests; Able to determine vitamin C levels in samples; Able to isolate and characterize DNA from samples; Able to design biochemical practical methods for material 1-7	1. Skilled in analyzing protein levels using the Biuret method 2. Can analyze the data obtained; and 3. Skilled in analyzing vitamin C levels in fresh fruit by titration. 4. Can analyze the data obtained; and 5. Skilled in isolating DNA from samples 6. Skilled in carrying out DNA electrophoresis 7. Able to determine the size of DNA based on electrophoresis results 8. Skilled in carrying out biochemistry practical material 1-7 with your own design	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Practical 3 X 50		**Material:** determine the number of peroxides and free fatty acids in quantitative lipid tests; Able to determine vitamin C levels in samples; Able to isolate and characterize DNA from samples; Able to design biochemistry practical methods for material 1-7 **References:** *Lehninger, 1988, Basics of Biochemistry, volume 1, Jakarta, Erlangga*	5%

12	Able to determine peroxide and free fatty acid numbers in quantitative lipid tests; Able to determine vitamin C levels in samples; Able to isolate and characterize DNA from samples; Able to design biochemical practical methods for material 1-7	1. Skilled in analyzing protein levels using the Biuret method 2. Can analyze the data obtained; and 3. Skilled in analyzing vitamin C levels in fresh fruit by titration. 4. Can analyze the data obtained; and 5. Skilled in isolating DNA from samples 6. Skilled in carrying out DNA electrophoresis 7. Able to determine the size of DNA based on electrophoresis results 8. Skilled in carrying out biochemistry practical material 1-7 with your own design	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Practical 3 X 50		**Material:** determine the number of peroxides and free fatty acids in quantitative lipid tests; Able to determine vitamin C levels in samples; Able to isolate and characterize DNA from samples; Able to design biochemistry practical methods for material 1-7 **References:** *Boyer R, 2000. Modern Experimental Biochemistry. San Francisco: Addison Wesley Longman*	6%

13	Able to determine peroxide and free fatty acid numbers in quantitative lipid tests; Able to determine vitamin C levels in samples; Able to isolate and characterize DNA from samples; Able to design biochemical practical methods for material 1-7	1. Skilled in analyzing protein levels using the Biuret method 2. Can analyze the data obtained; and 3. Skilled in analyzing vitamin C levels in fresh fruit by titration. 4. Can analyze the data obtained; and 5. Skilled in isolating DNA from samples 6. Skilled in carrying out DNA electrophoresis 7. Able to determine the size of DNA based on electrophoresis results 8. Skilled in carrying out biochemistry practical material 1-7 with your own design	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Participatory Activities	Practical 3 X 50		**Material:** determine the number of peroxides and free fatty acids in quantitative lipid tests; determine vitamin C levels in samples; isolating and characterizing DNA from samples; designing biochemistry practical methods for material 1-7 **References:** *Boyer R, 2000. Modern Experimental Biochemistry. San Francisco: Addison Wesley Longman*	7%

14	Able to determine peroxide and free fatty acid numbers in quantitative lipid tests; Able to determine vitamin C levels in samples; Able to isolate and characterize DNA from samples; Able to design biochemical practical methods for material 1-7	1. Skilled in analyzing protein levels using the Biuret method 2. Can analyze the data obtained; and 3. Skilled in analyzing vitamin C levels in fresh fruit by titration. 4. Can analyze the data obtained; and 5. Skilled in isolating DNA from samples 6. Skilled in carrying out DNA electrophoresis 7. Able to determine the size of DNA based on electrophoresis results 8. Skilled in carrying out biochemistry practical material 1-7 with your own design	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Practical 3 X 50		**Material:** protein content analysis using the Biuret method 2. Can analyze the data obtained; and 3. Skilled in analyzing vitamin C levels in fresh fruit by titration 4. analyzing the data obtained; and 5. DNA isolation from DNA electrophoresis samples 7. DNA size based on electrophoresis results. **Reference:** *Boyer R, 2000. Modern Experimental Biochemistry. San Francisco: Addison Wesley Longman*	5%

15	Able to determine amino acid levels in samples; Able to determine blood glucose levels; Able to understand the effect of pH and enzyme concentration on enzyme activity; Able to determine protein levels using the biuret method; Able to carry out quantitative lipid tests; Able to analyze vitamin C; Able to isolate and characterize DNA from samples	1. Skilled in carrying out analysis to determine amino acid levels in samples; 2. Skilled in carrying out analysis to determine blood glucose levels; 3. Skilled in analyzing the effect of pH and enzyme concentration on enzyme activity; 4. Skilled in carrying out protein content analysis using the biuret method 5. Skilled in carrying out quantitative lipid test analysis; 6. Skilled in carrying out vitamin C analysis; 7. Skilled in isolating and characterizing DNA from samples	**Criteria:** 1. 1. Participation during lectures and practicums, carried out through observation (weight 2) 2. 2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3. 3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4. 4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5. The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Presentation 3 X 50			5%

16	UAS	Understand the basic principles of biochemistry practical activities	**Criteria:** 1.1. Participation during lectures and practicums, carried out through observation (weight 2) 2.2. Sub-summative tests or mid-semester exams (UTS) are carried out to assess indicators 1-11 through written exams, and are given weighting (2) 3.3. Structured assignment assessments and practical reports are averaged, then given a weight (3) 4.4. The final semester exam (UAS) is used to measure achievement of indicators 12-19, through a written exam, and the results are given a weight of 5. 5.The final NA is (participation value x2) (Assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 **Form of Assessment** : Project Results Assessment / Product Assessment	Presentation, discussion and demonstration 3 X 50			10%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	20%
2.	Project Results Assessment / Product Assessment	60.83%
3.	Practical Assessment	15.83%
4.	Test	3.33%
		99.99%

Notes

1. **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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
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.